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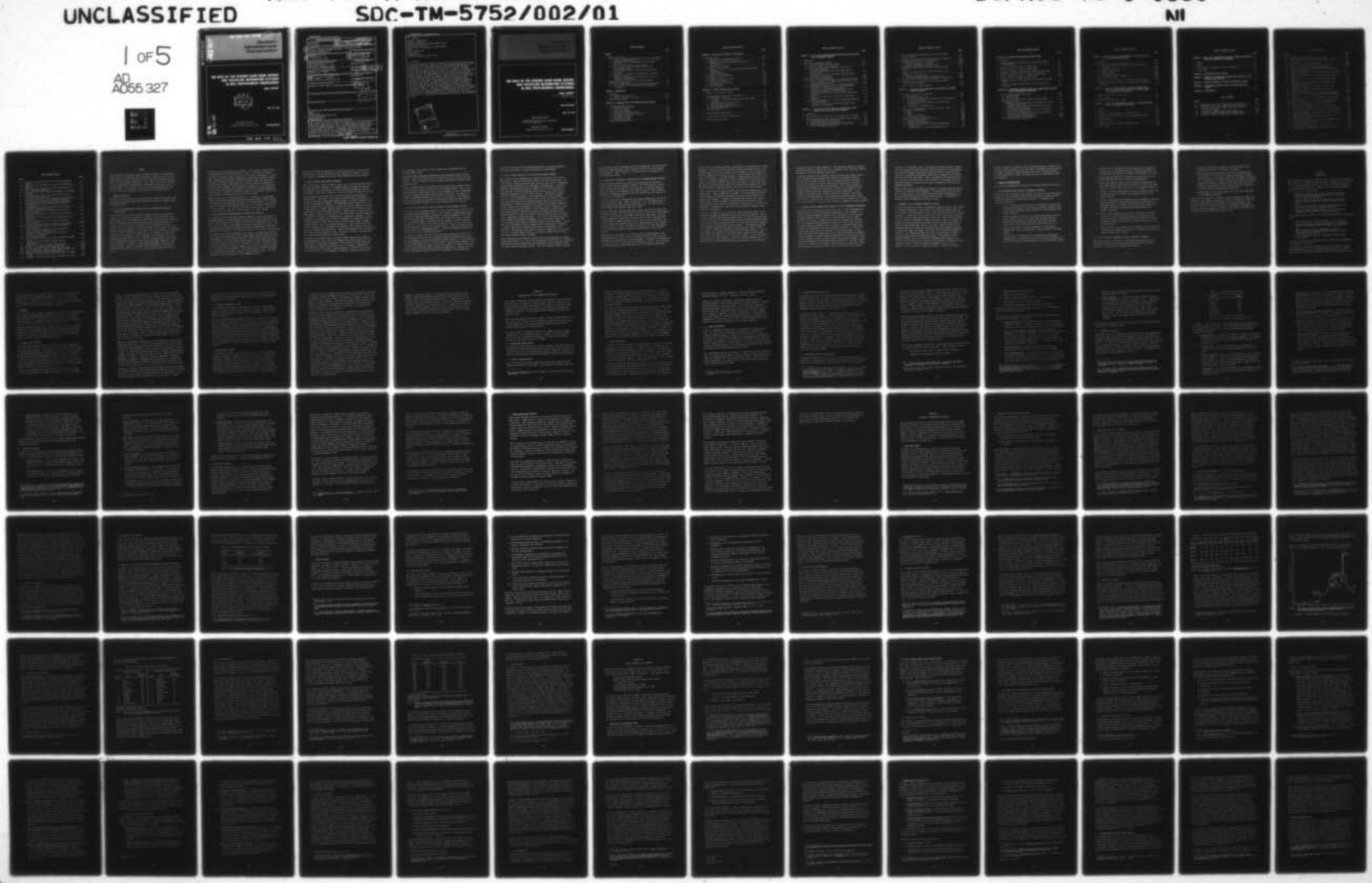

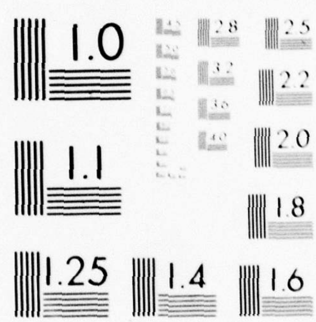

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System Development Corporation

THE ROLE OF THE CITIZENS BAND RADIO SERVICE AND TRAVELERS INFORMATION STATIONS IN CIVIL PREPAREDNESS EMERGENCIES

FINAL REPORT

MAY 15, 1978

AVAILABILITY NOTICE

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Final report on a project to assess the capabilities of the Citizens Band (CB) Radio Service (and other services in the Personal Radio Services) and of Travelers Information Stations (TIS) to provide emergency communications for civil preparedness operations. The project determined the range of uses currently made of CB and TIS. Determining current uses of CB involved surveying state and local civil preparedness agencies, state police and state highway patrol agencies, and volunteer CB organizations. The project

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Personal Radio Services
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REACT
State highway patrol
State police
SKYWARN program
Travelers Information Station (TIS)

20. (Cont'd)

identified formal and informal CB organizations and evaluated their utility in emergency operations. Among the formal organizations evaluated were REACT International, Inc., and ALERT Section, American Citizen Band Operators Association, Inc. The project evaluated the role of DCPA in providing guidance and direction in the use of CB and TIS in emergency situations. The project also evaluated miscellaneous aspects of CB such as: (1) uses made of CB by truckstops, (2) applications of CB by the National Weather Service SKYWARN program, (3) impact of National Highway Traffic Safety Administration National Emergency Action Radio (NEAR) program on emergency operations, and (4) appropriate functional relationships between CB and amateur radio (including the Radio Amateur Civil Emergency Service, RACES) in emergency operations. The project concluded that, despite technical and operational limitations, CB operators and their equipment are valuable resources in emergency operations and that DCPA should undertake a program to stimulate their effectiveness. The project also determined that TIS systems are useful in emergency operations. The report recommended specific CB and TIS programs for DCPA adoption. Various appendices are incorporated into the report including draft Civil Preparedness Circulars for CB and TIS, and a discussion of the impact of recent FCC Rules and Regulations changes on the effectiveness of RACES.

System
Development
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THE ROLE OF THE CITIZENS BAND RADIO SERVICE AND TRAVELERS INFORMATION STATIONS IN CIVIL PREPAREDNESS EMERGENCIES

FINAL REPORT

FOR DEFENSE CIVIL PREPAREDNESS AGENCY
WASHINGTON, D.C. 20301

Murray Rosenthal

MAY 15, 1978

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SUMMARY

System Development Corporation, under the terms of Defense Civil Preparedness Agency Contract No. DCPA01-76-C-0330, undertook to perform a study of the role of the Citizens Band (CB) Radio Service and of Travelers Information Stations (TIS) in civil preparedness emergencies. This study effort has been completed and SDC's findings and recommendations are presented in this report, and are summarized below. For purposes of the study, the CB Radio Service was broadened to include other applicable services in the Personal Radio Services.

1. SUMMARY OF FINDINGS

Analyses of the Personal Radio Services (particularly the CB Radio Service) and of Travelers Information Stations have resulted in a number of findings, which are summarized below.

1.1 UTILITY OF PERSONAL RADIO SERVICES FOR CIVIL PREPAREDNESS EMERGENCY COMMUNICATIONS

The CB Radio Service is characterized by numerous technical and operational problems. The frequencies, modulation, and power outputs specified for the service subject it to interference from other CBers, from non-CB radio frequency users who share the band, and from electrical motor and ignition noise. CB signals are subject to skywave propagation, and can sometimes be detected hundreds and even thousands of miles away as noise and occasionally as coherent signals. Skywave propagation is increasing as the 11-year sunspot cycle approaches its peak in 1979. More than 12-million people are licensed to operate about 25-million CB transceivers, creating congestion on some channels, and on all channels in many metropolitan areas. Some CBers lack discipline, interfering with communications, refusing to share channel time, and congregating at emergency locations. CB channels are rumor-prone; information on them is transmitted repeatedly, altering its content with each repetition. CB channels have been used to support a variety of crimes and other inappropriate activities.

The persons who cause problems on CB channels, or who use CB to support illegal activities appear to be a small minority of CBers. Most CBers are willing to cooperate with emergency services agencies, if they know an emergency is in progress. Despite serious technical limitations and operational problems, moreover, CBers have participated in many beneficial activities, which have saved lives and protected property. These beneficial activities include monitoring the CB emergency channel (Channel 9) and responding to requests on it for information and assistance; participating in community activities; patrolling neighborhoods to prevent crime; watching for urban and wildland fires; assisting in search and rescue missions; and supporting disaster relief operations.

GMRS is a high quality communications service. It operates in the ultra high frequency (UHF) band and transmits frequency-modulated signals. GMRS lacks most of the technical and operational problems of the CB Radio Service. It is fairly expensive to implement and requires a moderate level of technical sophistication to plan and operate. It is now primarily used by businesses, but is also used by some volunteer CB groups and a few governments as a control network.

1.2 FUTURE DIRECTIONS FOR DEVELOPMENT OF PERSONAL RADIO SERVICES

The CB Radio Service has undergone dramatic changes in the past half decade. It has grown rapidly from about 800,000 licensees in 1968 to over 12-million at present. Federal Communications Commission (FCC) Rules and Regulations for the service have been revised to accommodate the interests and practices of CBers. Despite the growth and general loosening of the Rules and Regulations, the discipline of CB operations has not deteriorated further and may actually have improved.

The changes to the Rules and Regulations are likely to continue; the overall impact of such changes will generally be toward simplifying and loosening the Rules and Regulations. The CB boom has slowed, but license applications are still being received at a rate of at least a quarter-million a month (down from a peak of almost 1-million in January 1977), and sales on the order of 5-million radios a year are anticipated. Estimates indicate that CB transceivers may eventually be in 24 percent of all households. The CB Radio Service is likely to continue as a significant communications medium for the foreseeable future. Its slowed growth rate, however, may make it a more manageable resource.

The FCC is exploring the possibility of creating a new service in the Personal Radio Services. Several UHF bands are being considered as possible locations, and a number of configurations are also being considered for the new service.

1.3 FEDERAL PERSONAL RADIO SERVICES PROGRAMS

DCPA currently has a limited program to support use of the Personal Radio Services by civil preparedness agencies. The program primarily provides matching funds contributions for the installation of CB base stations and GMRS base stations and repeaters, which must be justified in civil preparedness communications plans.

Several programs for using CB radio have been developed by the Department of Transportation. The largest of these (and the largest federal CB program) is the National Emergency Action Radio (NEAR) program of the National Highway Traffic Safety Administration (NHTSA). The NHTSA NEAR program allows states to use federal highway safety block grants to develop and operate programs for using the CB Radio Service to improve emergency medical services, police traffic services, debris hazard control, and school bus safety. Before states can spend funds on NEAR programs, however, they must develop state NEAR plans. The state plans have to provide for all aspects of implementing and operating the programs. State programs can use federal funds to install CB equipment in vehicles and fixed locations operated by a wide variety of state and local public safety, highway, emergency medical, and civil preparedness agencies. Federal funds can also be used for training, public information and education, data collection and evaluation, and staffing and administration. States are encouraged to use CB volunteers, but cannot purchase equipment for them. The State of Illinois is most advanced in developing and implementing its NEAR program.

In addition to the NEAR program, the Federal Highway Administration (FHWA) is experimenting with various in-vehicle communications systems and the U.S. Coast Guard (USCG) is installing CB equipment. Most recently, the FHWA program has concentrated on adapting CB transceivers for use in highway communications. USCG efforts will place CB base station transceivers in about 200 of its Search and Rescue Stations. The CB equipment is intended to supplement USCG marine

radio systems; it will provide a limited capability to communicate with CB-equipped pleasure boats.

The Law Enforcement Assistance Administration has apparently provided limited funding to acquire CB transceivers for installation in police vehicles and fixed locations. These acquisitions have been arranged through state criminal justice planning agencies.

Finally, various offices of the National Weather Service have recruited teams of tornado and severe weather spotters through the SKYWARN program. Many of these teams have used CB transceivers, amateur radio equipment, or both to communicate with each other and with National Weather Service facilities. In general, development of SKYWARN networks has been done as a local option. Some National Weather Service offices, especially in tornado-prone areas, have been effective in developing SKYWARN networks, while others have done little in this area.

1.4 USE OF CB RADIO SERVICE BY STATE AND LOCAL CIVIL PREPAREDNESS AGENCIES

Of 48 state civil preparedness agencies for which information was available, only 24 currently owned CB equipment (nine of the 24 planned to upgrade their equipment) and two additional agencies planned to acquire CB equipment in the future. Most of the states using CB equipment made only limited use of it; for example, only two agencies appear to have used their CB equipment in actual large-scale emergencies. Most agencies were skeptical about the value of CB at state level, and many doubted its value for any official purpose. Little or nothing has been done by state civil preparedness agencies to organize and manage CB capabilities for use by local civil preparedness agencies.

In contrast, a sample of 90 local civil preparedness agencies in 36 states, selected because their state civil preparedness agencies considered them to have good CB programs, were much more favorably disposed toward CB. Of the 90 agencies, 83 owned CB equipment (and 17 of the 83 planned to upgrade their equipment); the remaining seven agencies planned to acquire CB equipment, but most of these were already involved with CB through volunteer CB organizations. Slightly over one-half of the agencies reported using their CB equipment in major emergencies,

virtually all the local civil preparedness agencies in the sample appeared to feel that the advantages of using CB outweighed the disadvantages.

1.5 USE OF CB RADIO SERVICE BY STATE POLICE/STATE PATROL AGENCIES

State police and state highway patrol agencies make extensive use of the CB Radio Service. This use has developed rapidly in the last several years. In a 1975 survey of state police/state patrol agencies, only two of 45 respondents indicated that the benefits of CB outweighed its disadvantages. In general, opposition to CB among these agencies stemmed from its use by truckers and other motorists to violate speed laws and from concerns that using CB would diminish the agencies' control of their personnel. Demonstrated successes with CB by the Ohio and Missouri State Highway Patrols, as well as NHTSA actions to create the NEAR program indicated that use of CB could be beneficial. Other state police/state patrol agencies decided using CB was preferrable to disregarding it. Reports received over CB channels often warned of dangerous drivers, hazardous road conditions, or motorists in need of assistance. State police/state patrol agencies began to use CB transceivers in their vehicles and fixed facilities. Some states acquired CB equipment with state funds; others allowed their officers to install their own equipment; and still others used a combination of these approaches. A total of 48 of 49 state police/state patrol agencies had installed CB equipment in at least some of their cars; only one agency had an absolute prohibition against using CB equipment. In all, more than 13,000 agency cars were equipped with CB transceivers. In addition, at lease 30 agencies had installed CB base station transceivers in fixed facilities. The numbers of base station transceivers ranged from a few to more than 100. The NEAR program is likely to increase the number of state police/ state patrol agencies using CB equipment.

State police/state patrol agencies primarily used their CB equipment in highway-related applications, but in excess of three-quarters of those for which information was available reported using CB in other applications such as conducting search and rescue missions and weather watches. Only three agencies, however, reported

using CB in what could be considered large-scale emergencies. Few state police/ state patrol agencies seemed to have developed effective ties with volunteer CB organizations. Their recognition of problems involved in managing CB resources was also limited.

1.6 CAPABILITIES OF VOLUNTEER CB ORGANIZATIONS TO PERFORM EMERGENCY SERVICES

Review of disaster experience indicates that preplanning and training are required for an effective emergency response. This is particularly true for using volunteers such as CBers (and radio amateurs) in emergency operations. During the course of the emergency, the volunteers have to receive adequate supervision, assignments compatible with their capabilities, and instructions in a form they can understand.

A review of volunteer CB organizations and programs suggests that four are of potential interest to DCPA: REACT International, Inc.; the ALERT Section of the American Citizens Band Operators Association, Inc.; U.S. Citizen Radio Council (USCRC); and Community Radio Watch (CRW).

REACT and ALERT have organized teams whose primary function is to monitor the CB emergency channel, but which provide a variety of other routine and emergency services. There are about 1,800 REACT teams and 440 ALERT teams. Both have national headquarters capabilities, which provide for overall administration of teams and for communications among teams. Both have many state-level components to facilitate interaction with state NEAR programs and state emergency services agencies. Finally, both REACT and ALERT have achieved high degrees of discipline within teams and reasonable standardization from one team to another.

USCRC works for improvement of the CB Radio Service through changes to the Communications Act of 1934, as well as through revisions to FCC's Rules and Regulations and improvements in their enforcement. The USCRC is an organization of state CB councils. It does not perform emergency services, but is concerned with establishing conditions under which they can be conducted effectively.

Finally, CRW is a program using CBers, radio amateurs, and two-way radio equipped businesses to report situations potentially requiring responses by police, fire, emergency medical, and other emergency services agencies. CRW is sponsored by Motorola Communications and Electronics Inc., which provides basic guidance and supporting materials. Local CRW programs are conducted without any ties to each other or to a national organization. CRW is noteworthy for effectively tying together CBers, radio amateurs, and business radio users. In fact, some local CRW programs provide excellent models for integrating the capabilities of CBers and radio amateurs (along with business radio users) into effective teams.

Survey responses from 133 REACT and ALERT teams revealed information about their capabilities. Teams averaged about 52 members. Most were equipped with more than one mobile CB transceiver per member, and about one base station transceiver per two members. In addition, individual teams owned or had access to a wide variety of other equipment including 4-wheel-drive vehicles, mobile command/communications centers, and specialized vehicles such as tow trucks and ambulances. Virtually all of them received and responded to messages transmitted over CB channels.

A total of 123 teams (or over 92 percent of those responding) claimed to be officially recognized by emergency services and other local agencies. Only 25 (or about one-fifth) had written agreements with one or more of these agencies. A total of 83 teams (or over three-fifths) reported supporting emergency operations; and 65 of them (or almost one-half of the teams surveyed) gave examples of the operations in which they had been involved. Team functions included both providing communications support and providing other types of support (for example, controlling traffic and enforcing perimeter security). While 71 (or slightly over one-half) of all teams surveyed claimed to have emergency plans, only a few were supplied for evaluation, and most of those were monitoring procedures or other documents, but were not effective emergency plans. In general, most of the REACT and ALERT teams surveyed appear to have performed

considerable service in their communities. They have great potential to provide emergency services, but neither they nor the communities they served had prepared adequately to use their emergency capabilities.

It was also determined that truckstops offered CB capabilities, which could be used to supplement those available from volunteers and emergency services agencies. Most operate around the clock, are equipped with CB transceivers, and also have terminals on various communications systems used to transmit permits, load orders, and money to truck drivers. Some of these systems are derived from the Western Union Telex system; others use the commercial voice telephone network, sometimes terminated by facsimile transceivers. In an emergency, truckstops provide locations from which information can be transmitted to CB-equipped vehicles. Their communications networks can be pressed into service to communicate the information that truckstop personnel are to transmit over CB channels. Volunteers can be assigned to supplement truckstop personnel.

1.7 PROGRAM FOR USING PERSONAL RADIO SERVICES IN CIVIL PREPAREDNESS EMERGENCIES

Local governments can exercise positive control over CB radio (supplemented by GMRS and any new service, as appropriate) through one of two programs: (1) a minimum CB program designed to determine what information (or misinformation) is being transmitted over CB channels, to suppress rumors, and to respond selectively to reports of damage and injuries and to requests for assistance; or (2) an improved CB program designed to make active use of CBers and their equipment (possibly supplemented by radio amateurs and business radio users) as sources of communications and other emergency assistance. An improved CB program should also include the functions of the minimum program. In some communities whose public safety agencies have installed extensive CB equipment, it may be possible to develop minimum CB programs without involving volunteers; in most communities, however, either program requires using volunteers. Where a minimum CB program can be developed without volunteers, a relatively simple plan can be prepared for the program. Where volunteers are required, a number of steps should be followed to assure that they can perform their assigned

functions: (1) developing a plan; (2) adopting an existing volunteer organization, or recruiting a new one to provide required services; (3) training CBers; (4) giving them suitable experience so they are proficient in their assigned tasks; and (5) providing them adequate supervision in emergencies and suitable directions from their supervisors. Either the minimum or the improved CB program, combined with normal public safety procedures, will frequently preclude disruptive behavior from CBers, who can always be expected to show up during emergency operations.

DCPA can take the lead in planning and developing a federally sponsored program to make use of CBers and their equipment. This program can use the GMRS wherever it is appropriate. The program should also provide for emergency use of any new service developed in the Personal Radio Services. The details of a suitable program are summarized in Section 2, below.

1.8 EMERGENCY USE OF TRAVELERS INFORMATION STATIONS

Travelers Information Stations are low-powered broadcast stations. They transmit on frequencies immediately above and below the commercial broadcast band, and are received on standard automobile radios, most of which can be tuned to the TIS frequencies. These stations are licensed by the FCC for operation at locations affecting travelers--parks and historical sites; air, train, and bus terminals; interstate highway interchanges; bridges; and tunnels. Only a few hundred TIS systems have been installed to date, most of them in national parks and monuments and other federal lands used for recreation. Some TIS systems can be programmed remotely, but most use prerecorded tape loop cartridges, which must be replaced to change the message. Both types of TIS systems are potentially useful in civil preparedness emergencies involving the movement of people in automobiles such as crisis relocation situations. This potential can be realized, however, only if the appropriate emergency services agencies are aware of the TIS systems in their areas and are prepared to disseminate suitable messages over them. Clearly the remotely programmed TIS units are more amenable to use in dynamically changing situations. Since many TIS systems

have been installed in locations, such as recreational areas, not likely to be involved in major emergencies, it is appropriate for emergency services agencies to arrange in advance to remove them and to move them to critical locations. It is also appropriate for DCPA to stockpile TIS units for deployment to emergency locations.

2. SUMMARY OF RECOMMENDATIONS

The following recommendations are based on the findings summarized in Section I.

2.1 USE OF PERSONAL RADIO SERVICES IN EMERGENCY OPERATIONS

DCPA should make a commitment to encouraging state and local civil preparedness agencies to use the CB Radio Service (and, if appropriate, GMRS and any new service developed in the Personal Radio Services). To implement this commitment DCPA should:

1. Assign one qualified full-time person to developing the program and provide him with support from DCPA Region personnel, especially those in the On-Site Assistance program, and from U.S. Army Communications Command personnel.
2. Establish liaison with agencies and organizations concerned with the Personal Radio Services: FCC; NHTSA, FHWA, and USCG; National Weather Service; Electronics Industries Association; and REACT, ALERT, USCRC, and Motorola Communications and Electronics, Inc.
3. Negotiate with NHTSA to develop a memorandum of understanding allowing DCPA to add its requirements to and participate in the NEAR program.
4. Monitor other U.S. Department of Transportation, Law Enforcement Administration, and National Weather Service programs involving CB to influence any aspects of them applicable to civil preparedness programs.

5. Develop plans for extending the NEAR program to civil preparedness operations (or, if an agreement cannot be negotiated with NHTSA, for an independent DCPA-sponsored CB program), and implement those plans.

6. Prepare and distribute basic CB materials to state and local civil preparedness agencies and to volunteer CB organizations.

7. Monitor and influence changes in the FCC Rules and Regulations for the CB Radio Service, GMRS, and any new service in the Personal Radio Services to maximize their utility in civil preparedness operations.

8. Attempt to reserve an additional CB channel for emergency traffic and to separate travelers information from emergency traffic on the present Channel 9.

9. Advocate allowing high-level emergency services personnel to clear CB channels temporarily in large-scale emergencies, and delegating of enforcement powers to state and local law enforcement agencies for violations of CB Rules and Regulations affecting large-scale emergency operations.

10. Secure a waiver against application of Section 606 of the Communications Act of 1934, which would prohibit CB communications in a national emergency, limiting wartime CB communications to emergency transmissions and those essential to effective completion of crisis relocation efforts.

11. Make provisions, in any program to use truckstops in crisis relocation situations, for disseminating messages via truckstop CB equipment and wireline communications circuits.

2.2 USE OF TRAVELERS INFORMATION STATIONS IN EMERGENCY OPERATIONS

DCPA should also make a commitment to encouraging state and local civil preparedness agencies to use Travelers Information Stations in emergency operations. To implement this commitment DCPA should:

1. Develop and disseminate information on TIS system capabilities, including an inventory of TIS systems in operation.
2. Seek clarifications and changes to the FCC Rules and Regulations facilitating use of TIS systems in emergency operation, including authorization to: (1) transmit general civil preparedness information over TIS system; and (2) license stockpiled TIS systems for use during emergencies in generally identified areas rather than in specified locations; and alternately license fixed TIS systems for relocation to generally identified areas during emergencies.
3. Acquire eight TIS units and stockpile them, one in each DCPA Region, for deployment in emergencies.

These steps will allow DCPA to implement effective programs for using the CB Radio Service and Travelers Information Stations in emergencies. While both programs can make important contributions to emergency operations, a CB program is particularly important because it will mobilize large numbers of volunteers and their equipment, and will also allow DCPA to associate civil preparedness with the broad public interest in CB.

CHAPTER I

INTRODUCTION

System Development Corporation, under the terms of Defense Civil Preparedness Agency Contract No. DCPA01-76-C-0330, undertook to perform a study of the role of the Citizens Band Radio Service and of Travelers Information Stations in civil preparedness emergencies. Included in the initial work statement for the study were the following tasks:

1. Determine the range of uses currently made of Citizens Band (CB) and Travelers Information Stations (TIS) by state and local civil preparedness agencies
2. Identify formal and informal CB organizations at state and local levels and evaluate their utility in emergency operations
3. Evaluate the role of DCPA in providing guidance and direction in the use of CB and TIS in emergency situations
4. Formulate guidance strategies DCPA can use to optimize the availability of CB and TIS in emergency situations

The following tasks were added to the work statement during the course of the study:

5. Determine the range of uses being made of CB by truckstops
6. Evaluate the impact on emergency operations of the development the National Emergency Action Radio (NEAR) and deployment of TIS
7. Review the range of CB uses encouraged by the National Weather Service for communicating hazards reports to government agencies and the public
8. Define appropriate functional relationships between CB and amateur radio

This study effort has been completed and SDC's findings and recommendations are presented in this report.

For purposes of the study, the CB Radio Service was broadened to include other applicable services of the Personal Radio Services. The Personal Radio Services also include the Remote Control (R/C) Radio Service and the

General Mobile Radio Service (GMRS). While the R/C Radio Service has little applicability to civil preparedness operations, the GMRS is applicable. In addition, several alternative services have been proposed for the Personal Radio Services; if one of these alternatives is implemented, it is also likely to be applicable to future civil preparedness operations.

1. BACKGROUND

CB radio uses low-cost, low-power transceivers to provide direct communications among people and organizations who generally lack other access to two-way radio communications. The technology is well established, and CB radio is extremely popular. Considerable experience with CB radio has been amassed by various federal, state, and local emergency services agencies.

Travelers Information Stations are low-powered stations designed to broadcast information to the occupants of motor vehicles through conventional radio receivers. In contrast to CB radio, TIS systems are relatively new, few of them have been installed to date, and operational experience with them is limited, especially in civil preparedness emergencies.

1.1 PERSONAL RADIO SERVICES

The Citizens Radio Service (CRS) was created by the Federal Communications Commission in the mid-1940s. In 1976, the Citizens Radio Service was renamed the Personal Radio Services. One of the three classes of stations recognized for the CRS eventually became the GMRS; and another, the R/C Radio Service. CRS was intended for use in business and personal activities. Despite anticipation that CRS would provide the general public with access to two-way radio, equipment costs remained high and the number of licensees in the service grew slowly. In fact, the third class of CRS stations never achieved broad user support and was discontinued in 1971.

In 1958, the FCC authorized a fourth class of CRS stations, which became known as Citizens Band (or CB) stations, and evolved into today's CB Radio

Service. The technical characteristics of CB were such that less expensive equipment could be produced; however, these technical characteristics resulted in a service very susceptible to interference. Despite FCC intentions to create a two-way radio service for business and personal uses, CBers almost immediately began to use the band illegally for recreational and hobby purposes. CB radio did grow vigorously, however, until the late 1960s, when the number of licensees stabilized at about 800,000. In 1973, an oil boycott was imposed on the United States and other industrialized nations by the Organization of Petroleum Exporting Countries. During the course of that boycott, long-haul truckers used CB radio to locate fuel, evade state police or state highway patrol officers enforcing speed limits, and coordinate several spectacular traffic jams on interstate highways to protest fuel shortages and speed limits. The news media publicized CB and the truckers' use of it, making CB a national fad. By the time sales finally slowed in 1977, a total of more than 11-million licenses had been issued. Earlier tendencies to use CB for recreational and hobby purposes accelerated, and FCC's Rules and Regulations were modified drastically in an attempt to accommodate the growing numbers of users and their interests in the service.

Despite the casualness of most CB use, there has always been a public service element associated with it. Shortly after the authorization of CB, volunteer organizations were established to monitor CB channels, relay emergency calls to the proper authorities, and provide information and assistance to travelers. In 1970, a CB channel was set aside specifically for emergency communications relating to the safety of life and property, and for communications to provide assistance to travelers. CBers have frequently participated in emergency operations, sometimes on a preplanned basis and sometimes on a casual basis. In some cases, CB support of emergency operations had been successful; in others it has proved disruptive; and in still others it has had mixed results.

The boom in CB sales and licenses has produced a marked increase in the number of volunteers available to CB organizations performing public service functions. The impetus for the present study was provided by the large number of people who own CB equipment and are licensed in the CB radio Service. A major

concern has been to determine whether the resources they provide can be used effectively in civil preparedness emergencies, and, if so, how best can the potential of CB be realized.

1.2 TRAVELERS INFORMATION STATIONS

In the mid-1970s installations were completed of low-powered broadcasting stations located at or near places frequented by travelers. These installations have continued and, as a result of an FCC rulemaking in 1977, are likely to accelerate.

TIS systems broadcast amplitude-modulate signals on frequencies just above and below the commercial broadcast band. TIS signals are received on conventional automobile radios, most of which tune slightly beyond the broadcast band. TIS systems are intended to provide travelers with information to aid them in finding facilities (by telling them of their availability), enjoying tourist attractions en route (by providing them interpretive information), and arriving safely at their destinations (by giving them information on highway and weather conditions). While there is little experience with TIS technology, especially for civil preparedness emergencies, DCPA initiated this component of the current study to determine the extent to which TIS systems could be adopted to emergency uses.

2. ORGANIZATION OF REPORT

In developing the study of the CB Radio Service and Travelers Information Stations, preponderant emphasis was placed on the former. CB radio is an established capability. Millions of CB operators have been licensed and have purchased and are using CB transceivers. CB radio and CBers have already had an impact on emergency services. Many agencies, particularly state police and state highway patrol agencies, sheriffs' offices, police departments, and local civil preparedness agencies have already begun to use the CB Radio Service (with or without the assistance of volunteer CBers).

CB operators and their equipment have been involved in many disaster operations. In contrast, Travelers Information Stations are relatively new. Their use by governments is relatively limited. TIS technology is simpler, and use of TIS systems is highly regulated. Reflecting this emphasis on the CB Radio Service, Chapters II through IX contain detailed information on the Personal Radio Services (particularly the CB Radio Service); Chapter X, contains information on Travelers Information Stations.

Chapters II and III contain, respectively, a description of the characteristics of the Personal Radio Services and an analysis of the evolution of the services and their possible future development. Chapter IV deals with federal government activities involving the use of the CB Radio Service; it contains descriptions of programs developed by six federal agencies. Chapters V and VI treat state and local government activities involving the use of the CB Radio Service; Chapter V contains a description of state and local civil preparedness agency uses of the service, while Chapter VI contains a description of state police/state patrol agency uses. Chapters VII and VIII describe and analyze volunteer CB groups. Chapter VII contains reviews of two disasters in which CB volunteers participated; a discussion of factors contributing to the effectiveness or ineffectiveness of their participation; a general assessment of volunteer CB organizations and programs potentially able to assist in emergency operations; and, finally, an assessment of the potential role of truckstops in using CB during civil preparedness emergencies. Chapter VIII details the findings of a survey of volunteer CB teams organized by REACT International, Inc., and by the ALERT Section of the American Citizens Band Operators Association, Inc. Chapter IX concludes the portion of the report dealing with the Personal Radio Services; it defines two alternative programs by which local civil preparedness agencies and other emergency services agencies can guide and control the use of CB in emergencies, and it also identifies the steps DCPA should take to encourage implementation of these two programs. Chapter X describes Travelers Information Stations, evaluates their utility in civil preparedness emergencies, and defines a program by which DCPA can stimulate their use in such emergencies.

Appendix A evaluates the impact on civil preparedness operations of recent changes in the Federal Communications Commission Rules and Regulations for the Radio Amateur Civil Emergency Service (RACES). Appendices B and C contain draft Civil Preparedness Circulars for CB and TIS. Appendices D through F present, respectively, CB licensing statistics; a summary of state police/ state patrol agency equipment inventories; and a partial inventory of TIS installations. Appendices G presents four questionnaires used in the study. Finally, Appendix H contains the study bibliography.

CHAPTER II

CHARACTERISTICS OF THE PERSONAL RADIO SERVICES

The technical, regulatory, and operational characteristics of the Citizens Band Radio Service have evolved over several decades. While the evolution of the CB Radio Service is probably not complete, the millions of CB radios currently available to the public will dictate for years to come the capabilities and limitations with which civil preparedness efforts involving CB channels and CBers must reckon.

While the General Mobile Radio Service (GMRS) is hardly a mass phenomenon it has also evolved over the years, has some regulatory characteristics akin to those of the CB Radio Service, but has technical and operational characteristics markedly different from the CB Radio Service.

To provide a basis for subsequent analysis, this chapter reviews the current characteristics of the CB Radio Service. To provide a useful counterpoint (and to point out its potential usefulness), this chapter also includes a discussion of the characteristics of the GMRS.

1. CITIZENS BAND RADIO SERVICE

The following sections discuss the technical, regulatory, and operational characteristics of the CB Radio Service; and conclude with an overall evaluation of the service for use by civil preparedness agencies. Regulatory information is based on current Federal Communications Commission (FCC) Rules and Regulations.

1.1 TECHNICAL CHARACTERISTICS

The CB Radio Service currently operates on 40 specified frequencies in the frequency band 26.965 to 27.395 MHz.[1] (Each frequency is commonly numbered as

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[1] FCC, Rules and Regulations, Part 95, Subpart D, "Citizens Band Radio Service," April 1977.

Channel 1 through 40 by agreement of CB radio manufacturers.) Of the 40 frequencies, 27.065 MHz (commonly referred to as Channel 9) is reserved for: (1) emergency communications affecting the safety of lives or the protection of property, and (2) communications necessary to render assistance to motorists. All frequencies, including 27.065 MHz, are shared by all stations in the CB Radio Service.

The service is limited to voice transmissions except for tones or other signals used to operate tone-actuated squelch or selective-calling circuits. Only amplitude modulated (AM) signals can be transmitted, but double sideband (DSB) and single sideband (SSB) emissions can be used on all 40 channels. DSB emissions are limited to 4 watts carrier power output; SSB emissions, to 12 watts peak envelope power output to an antenna. Use of external radio frequency power amplifiers is specifically prohibited. The height of a directional antenna is limited to 20 feet above the ground or 20 feet above the man-made structure or natural object on which the antenna is mounted; the height of an omnidirectional antenna, to 60 feet above the ground. All CB transmitters are type accepted to assure their compliance with FCC restrictions on bandwidth, frequency tolerance, spurious radiation, and other technical characteristics.

1.2 LICENSE PROVISIONS

A license in the CB Radio Service is an authorization to operate a station and to transmit on all 40 frequencies. An applicant for a CB license need not demonstrate any technical skill in operating a station; he also does not have to justify his need for and intended use of his station. Because the licensee has not had to demonstrate technical skill, repairs and internal adjustments of his equipment must be made by (or under the supervision of) a person holding a first- or second-class commercial radio operators license.

A licensee can hold only one CB station license, and all transceivers he owns--base stations, mobiles, and personal portables--are covered by that license. The FCC must approve in advance any increase in the number of transceivers included under one station license, but it need not approve the substitution of new equipment for old. A licensee's transceivers can be used anywhere in

the United States; a permanent change in a licensee's address need only be submitted promptly to the FCC. A license is valid for 5 years.

Licenses are granted to individuals, partnerships, and state and local government entities. They are also granted, with special approval, to unincorporated associations and to corporations. All licensees (or partners in partnerships granted licenses) must be citizens of the United States and at least 18 years old. Government entities are specifically warned, however, that "frequencies available to stations in this service are shared without distinction between all licensees and that no protection is afforded to the communications of any station in this service from interference which may be caused by the authorized operation of other licensed stations."[1]

1.3 CONTROL REQUIREMENTS

Control of authorized transmitters must be retained by the licensee at all times. Any station may, nevertheless, be operated by all members of a licensee's immediate family (including his minor children); by partners, if the licensee is a partnership; by members of an unincorporated association; by employees of the licensee; or by other persons, if required, and if approved by the FCC upon receipt of a special request. All use of a station by partners, employees, association members, and other authorized individuals must relate to the business of the organization holding the license.

All communications should be restricted to the minimum practicable transmission time. All communications between CB stations (that is between transceivers of different licensees) must last no longer than 5 minutes. After each inter-station communication of 5 minutes or less, the participating stations must remain silent for at least 1 minute.

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[1] Loc. Cit., note following Para. 95.411(a).

1.4 AUTHORIZED AND PROHIBITED USES

A CB station can be used for communications affecting the licensee's personal and business activities. A station can also be used for nonpersonal communications related to: (1) preserving life and protecting property; (2) assisting motorists, boaters, and other travelers; and (3) participating in civil preparedness drills, tests, and actual emergencies proclaimed by the civil preparedness agency responsible for the impacted areas.

A CB station cannot be used in: (1) performing any illegal activities; (2) disseminating profane, obscene, or indecent language; (3) communicating with stations in the Amateur Radio Service, unlicensed stations, or foreign stations; (4) transmitting program material for direct retransmission by a radio or television station, dissemination over a public address system, or for amusement or entertainment or solely to attract attention; (5) interfering intentionally with the communications of another station; (6) transmitting a false distress signal; (7) advertising or soliciting the sale of goods and services, or carrying communications for hire; and (8) communicating (or attempting to communicate) with another station over a distance of more than 150 miles. While the list of prohibitions also includes the transmission of messages in other than plain language, abbreviations, including recognized operating signals (such as 10-codes), can be used, if a list of all such abbreviations and their meanings is kept in station records and is made available to the FCC on demand.

1.5 ENFORCEMENT OF RULES AND REGULATIONS

Enforcement responsibility is vested in the FCC's Field Operations Bureau, which polices compliance with the CB Rules and Regulations through 30 District Offices and five Special Enforcement Facilities (SEF).[1] There are about

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[1] S. J. Lipoff, User Rule Compliance Task Coordinator, letter to J. B. Young, Field Operations Bureau, FCC, subject: Request for Information on FCC Enforcement Efforts, April 13, 1977; J. B. Young, letter to S. J. Lipoff, subject: Response to Request in Letter of April 13, 1977, July 5, 1977, both in S. J. Lipoff, Proceedings of the User Rule Compliance Task Group, Personal Use Radio Advisory Committee, FCC, updated to March 9, 1978.

120 technical and 50 clerical personnel in District Offices to police all communications services under FCC control. Special Enforcement Facilities, in contrast, were established solely to enforce the FCC Rules and Regulations for the CB Radio Service and apply all of their manpower to this function. SEFs are located in Long Beach, California; Powder Springs, Georgia; Laurel, Maryland; Detroit, Michigan; and Grand Island, Nebraska. (The personnel complement of each SEF, if fully staffed, is five engineers, two technicians, and a clerk.) Clearly, the number of persons available to enforce the CB Rules and Regulations is minuscule in relation to the number of licensees.

A SEF enforcement action takes the form of a strike in which four-person teams from a facility move, without advanced notification, into a city or town.[1] They use monitoring and radiolocation equipment to identify and locate as many CB violators as possible in a several-day period, still keeping their presence secret. At the end of that period, team members inspect the locations used by violators, talk with them, and observe the equipment they have been using. Finally the team members return to the SEF and initiate the appropriate actions. Personnel from the District Offices perform similar identification, inspection, and penalization functions, but do so in their areas of responsibility and intersperce them with other enforcement efforts.

The FCC places emphasis on seven types of violations, which are called "trigger violations" because they initiate FCC action.[2] These violations include:

1. Transmitting at power levels in excess of those authorized
2. Transmitting on frequencies outside the CB band

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[1] FCC, Enforcing Citizens Radio Regulations: Conventional Enforcement Techniques, FCC/FOB/PD&E 76-01, April 1976, Appendix A.

[2] Discussion with Abe Sickle, Chief, Violations Division, Field Operations Bureau, FCC, November 2, 1977.

3. Communicating in excess of 150 miles

4. Using an overly high antenna

5. Failing to identify transmissions with an assigned call sign

6. Using profane, obscene, or indecent language

7. Interfering intentionally with transmissions on Channel 9

In general, violations other than trigger violations are overlooked unless they are flagrant and protracted.

Five actions are available for use against a violator, depending upon the severity of his violation or violations:[1]

1. Notice of Violation. The licensee is notified of his violation (or violations). He has to respond by indicating the steps he is taking to bring his activities into compliance with the Rules and Regulations.

2. Notice of Violation/Notice of Apparent Liability to Monetary Forfeiture. The licensee is notified of his violation (or violations) and is assessed a penalty. The penalty varies for a first such notice from $50 to $100 per violation; it increases to $100 on issuance of a second or subsequent notice. The maximum fine is $500 regardless of the number of violations.

3. License Revocation. In the event of protracted and willful violations, the FCC institutes license-revocation proceedings.

4. Cease and Desist Order. If the violations are very serious or very protracted (and especially if less severe actions have been taken and have failed to stop them), the violator is formally requested to stop his illegal actions. While this is an administrative procedure,

[1] FCC, 40th Annual Report: Fiscal Year 1974, n.d., pp. 73-74; FCC, Forfeiture Amount Levied to Vary, Public Notice 81337, April 26, 1977; FCC, Cost-Effectiveness of Alternative Compliance Techniques for the Citizens Radio Service, Appendices A and C.

failure to comply, causes the Field Operations Bureau to seek criminal sanctions against the violator.

5. Criminal Sanctions. For a criminal sanction, evidence of the most severe and flagrant violations is presented to the U.S. Attorney who has jurisdiction over the area in which they occurred. Search and seizure warrants are issued and are served by U.S. Marshals. Information on violators is released to local media. Cases are prosecuted in the federal courts, and fines, prison terms, or both may be levied. There has been recent emphasis on using criminal sanctions to make local examples out of particularly offensive violators.

At present, unlicensed violators fall outside the FCC's jurisdiction and must be prosecuted in the federal courts.

1.6 PERFORMANCE LIMITATIONS

The CB Radio Service is intended to be a medium for short-range communications. The limited range results from the frequencies, emissions, and power levels assigned and from the interference encountered both among CBers and from other sources. The expected mobile-to-base range is up to 8 miles in urban areas and up to 13 miles in rural areas.[1] A recent nationwide survey of 1,304 CBers, performed for the FCC, indicates that more than two-thirds of the respondents communicate over average distances of 6 miles or less.[2] The findings of the FCC-sponsored study are summarized in Table 2-1.

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[1] [U.S. Department of Transportation], Use of Citizens Radio Service for Transportation Safety: Report to the Deputy Secretary, DOT HS-801 760, p. III-10.

[2] B. E. Goodstadt, et al., Implementation of User Demand and Satisfaction Model for Personal Radio Services, Advanced Research Resources Organization, December 1977, pp. 45-46.

Table 2-1. Average Distance of CB Use

Distance	Percent
Under 1 mile	2.6
1-3 miles	28.6
3-6 miles	35.8
6-10 miles	17.9
10-15 miles	7.5
Over 15 miles	7.7

Source: B. E. Goodstadt, et al., Op. Cit., p. 46.

In addition to range restrictions, the CB Radio Service is also characterized by other performance limitations. Some of these limitations are inherent in the assigned spectrum, while others result from FCC-imposed constraints. These limitations include:

1. Shared Spectrum. The lowest 23 CB channels are shared with industrial, scientific, and medical (ISM) radio frequency equipment. The remaining 17 channels are shared with about 4,000 land mobile licensees until December 31, 1979.

2. Electrical Noise. The CB spectrum is close to the spectrum of electrical noise produced by automotive ignitions and by electrical motors.

3. Skywave Propagation. Signals in the CB frequencies, even at legal power levels, propagate by reflection off various layers of the ionosphere. Skywave signals can frequently be detected hundreds or thousands of miles away as noise or even as coherent signals. Illegal power levels and antenna heights compound the problem.

4. Foreign Users. Legal (and illegal) users of 27 MHz frequencies outside the United States can interfere with CB communications, when they are propagated by skywave.

5. Sunspot Activity. Some forms of skywave propagation will peak during the next several years as the 11-year sunspot cycle peaks. This peak sunspot activity will reduce the range of CB transmissions in rural areas by 80 percent and in smaller cities by 50 percent. It will have neglible impact on transmissions in metropolitan areas because high interference levels have already constrained the range of CB transmissions in those areas.[1]

6. Amplitude-Modulated, Low-Power Transmissions. Amplitude modulation produces poor resistance to interference. Similarly low power levels provide only limited advantage over noise and interference.

7. Channel Use. Except for Channel 9, all channels are available to all CBers for all purposes, allowing channel use to be inefficient. In some areas, certain channels may be saturated, while other channels are underused.[2] Because CB channels are amplitude modulated, and subject to skywave propagation, reuse of channels is poor.

8. Identification Procedures. Many CBers substitute handles (or nicknames) for call signs. This substitution may be operationally desirable because inexperienced persons may find it easier to give a handle and pick a handle out noise and interference than to say a call sign and detect a call sign. Handles, however, make it difficult for the FCC to enforce its Rules and Regulations because handles are not unique.

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[1] Discussion with Ronald Stone, Staff Manager, Personal Radio Planning Group, FCC, July 20, 1977.

[2] FCC, Enforcing Citizens Radio Regulations..., p. 14, indicates that, for eight cities, an average channel occupancy of 45.5 percent was measured across all 23 channels. This measurement was made in June 1975, and average channel occupancy may have increased markedly since that time.

9. Calling Procedures. Because much CB use is casual there is no dependable means of calling another party. The only consistent exception is Channel 9, which is monitored throughout the country by volunteers and by public safety agencies. When contact is made on a channel, including Channel 9, there is a tendency for the caller to complete his full transaction. Most CBers do not switch to another to clear the initial channel for additional calls.[1] The FCC abandoned its effort to establish Channel 11 as national calling channel because its effort did not accord with CB practice.[2]

In their aggregate, these limitations can, on occasion, impose serious problems on the use of the CB Radio Service for serious matters such as civil preparedness operations.

1.7 OPERATIONAL PROBLEMS

In addition to the performance limits that characterize the CB Radio Service, a number of operational problems must be considered in any application of the service to civil preparedness activities. The operational problems include:

1. Channel Congestion. The 40 available CB channels are shared by over 12-million licensees, operating approximately 25-million transceivers. The consequence is severe channel congestion, especially in urban areas.

2. Casual Communications. Many of the communications over CB channels are casual social contacts. While these types of communications are legal, they do interfere with the transmission of more important

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[1] Cary Hershey, et al., Personal Uses of Mobile Communications: Citizens Band Radio and the Local Community, in Raymond Bowers, et al., Communications for a Mobile Society: An Assessment of New Technology, Sage Publications, Inc., Beverly Hills, California, 1978, Table 6.

[2] FCC, Revision of Operating Rules for Class D Stations in the Citizens Band Service, Second Report and Order on Docket 20120, 42 FR 32678, August 4, 1976.

messages and can even interfere with CB support of emergency operations.

3. Lack of Discipline. Some CBers lack both communications and operational discipline. In the former category, CBers have deliberately interfered with communications and have refused to share channel time with other users. In the later category, CBers have congregated at the scene of a crime or accident, impeding emergency operations.

4. Rumor-Prone. Because a CB channel functions essentially as a party line, the lack of discipline and the casual nature of the communications result in the repetition and elaboration of hearsay information. In emergencies, this hearsay information has resulted in the overcommitment or unnecessary commitment of resources to minor or nonexistent problems.

5. Lack of Cohesiveness. A recent survey of CBers indicated that of 1,304 respondents, less than 4 percent belonged to a CB service organization and less than 6 percent belonged to other types of CB organizations.[1] This lack of cohesiveness makes CBers hard to organize.

6. Lack of Technical Background. CBers frequently lack any knowledge of communications procedures or of electronics. The tendency not to switch from a crowded contact channel to an available working channel has already been noted. CBers, furthermore, may not be able to overcome technical problems that arise during an emergency.

7. Poor Equipment. Many CB radios are of poor quality. While FCC type acceptance procedures generally assure that transmitters are built is acceptable standards, receivers, which are virtually unregulated

[1] B. E. Goodstadt, et al., Op. Cit., p. 50.

by the FCC, are often poorly designed and constructed. These receivers provide poor selectivity and inadequate interference rejection.

8. Illegal Equipment. Some CBers have connected amplifiers or power microphones to their radios, use amateur radios illegally to transmit on CB channels, or use antennas exceeding height limits. Use of amplifiers or amateur radios results in power output levels appreciably higher than those authorized by the FCC. Use of illegal antennas contributes to skywave propagation. Use of power microphones often results in modulation levels in excess of 100 percent. All of these techniques create interference for other, often distant, CBers.

9. Illegal Activity. CB radios have been used to support a variety of illegal activities including evading speed limits and weight stations, coordinating civil disorder, prostitution, poaching, robbery, burglary, fencing, and smuggling.

These operational problems increase the difficulties that can be expected in using CB transceivers and CBers to support civil preparedness operations.

1.8 OPERATIONAL BENEFITS

The operational limitations of the CB Radio Service and of CBers must be balanced against their operational benefits. CBers have participated successfully in many beneficial activites, which have clearly saved lives and property. These include supporting community activities, responding to requests on Channel 9 for information and assistance, patrolling neighborhoods to prevent crime, looking out for urban and wildland fires, assisting in search and rescue missions, and supporting disaster relief operations. Because of these demonstrable successes, it is unwise to overlook the communications potential of 25-million CB radios and 12-million licensees (plus family members and others who are familiar with the operation of shared CB radios).

Any attempt to disregard CB communications, in addition to rejecting a communications and manpower resource, also overlooks the public's historic communications behavior in an emergency. Confronted with an emergency, a common response is to contact relatives, friends, and neighbors for confirmation, encouragement, and guidance. Some people make these crisis-coping contacts on a face-to-face basis, but many people make them by telephone, despite almost habitual warnings from authorities to avoid telephoning in an emergency. The availability of CB radios--especially in a crisis relocation situation, in which vehicles play a critical role--will result, inevitably, in communications about the emergency in progress. Advice to stay off the air, even advice that CB communications are illegal because the president has declared a national emergency and has recinded CB licenses, are unlikely to inhibit fully this characteristic emergency communications behavior.[1] Disregarding this type of behavior can produce disruptive actions. The power of such actions can be seen in the effectiveness of the truckers' disruptions of interstate highways in 1973.

While CBers are not disciplined in the technical sense of the term, and there will never be completely consistent behavior among CBers, working with most of them does not pose any severe problems. The persons who cause problems on CB channels, or who use CB communications to support illegal activities, appear to be a small minority of all CBers. There is no assurance, furthermore, that the uncooperative few will not, on occasion, prevail, making it impossible to use CB channels or CBers in a particular emergency.

Most CBers, however, appear willing to cooperate with police, fire, civil preparedness, and other emergency services organizations if they know that an emergency is in progress. In fact, convergence behavior, which draws the

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[1] FCC, Communications Act of 1934 with Amendments..., updated to January 1974, Sec. 606(c).

curious to the scene of an emergency, may actually be easier to handle if people in CB-equipped vehicles receive meaningful information on the emergency. Finally, groups patrolling buildings and neighborhoods, who could be among the most difficult to manage, only occasionally display signs of vigilantism, and then only when sound recruiting, training, and management practices are not followed.[1]

It is imperative that CBers and CB radio, regardless of its application, be used in an appropriate manner. It makes no sense to try to use CB channels when either noise-free or long-haul communications are required. It is, similarly inappropriate to try to use CBers when either trained emergency-services personnel or trained communicators are needed (unless, of course, the CBers had been recruited and trained in advance to perform the appropriate tasks).

There are several effective CB programs and organizations already operating on a nationwide bases. They have established effective means of using volunteer CBers. While the percentage of CBers who participate in these programs and organizations is relatively small, these programs and organizations (and their members) do provide a nucleus from which effective civil preparedness programs can be built.

If CB channels and CBers are used within their capabilities, they will often provide services effectively that may not otherwise be available. The use of these resources may, furthermore, help to reduce maladaptive behavior stimulated by information--or misinformation--on CB channels.

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[1] R. K. Yin, et al., Patrolling the Neighborhood Beat: Residents and Residential Security, The Rand Corporation, R-1912-DOT, March 1976, pp. 114-115.

2. GENERAL MOBILE RADIO SERVICE

GMRS has both important similarities to and major differences from the CB Radio Service. GMRS operates on eight pairs of frequencies in the 460 to 470 MHz band. GMRS is generally limited to transmitting voice messages using frequency modulation (FM) and tones or other signals used to operate tone-activated squelch or selective-calling circuits. Unlike the CB Radio Service, however, a GMRS licensee can be authorized to use other emissions, if the licensee has justified their use. Power output is limited to 50 watts. The availability of pairs of frequencies allows a GMRS licensee to operate a repeater.

GMRS is similar to the CB Radio Service in that both are intended to be used for communications relating to personal and business matters, protecting life and property, rendering assistance to travelers, and supporting civil preparedness operations. Despite the emphasis on protecting life and property and on assisting travelers, however, no specific pair of frequencies is identified for this purpose.

The persons and organizations eligible for GMRS licenses are identical to those who can be licensed in the CB Radio Service: individuals, partnerships, unincorporated associations, corporations, and state and local government entities. The personal or organizational conditions under which GMRS licenses can be granted are also identical to those for granting CB licenses. As is the case with the CB Radio Service, no special protection is available to government entities licensed to operate in GMRS.

In both services, responsibility for control over all licensed transmitters is vested in the licensee. A wide range of the licensee's family or associates can, however, operate his equipment. The list of prohibited communications is identical for the two services.

A GMRS license is an authorization to operate a station. One 5-year license covers all equipment used by the licensee. An applicant for a GMRS license does not have to hold an operator's license or otherwise demonstrate any technical capabilities. The GMRS license application is, however, filed on the same form used to apply for licenses in the Public Safety, Industrial, and Land Transportation Radio Services. In contrast to the CB Radio Service license application, a GMRS application requires an explanation of the equipment configuration to be used and, thereby, imposes a *de facto* requirement that the applicant have at least some technical skills. Nevertheless, because of the absence of any requirement for an operator's license, all repairs and internal adjustments on GMRS equipment must be made by (or under the supervision of) a person holding a first- or second-class radio operator's license.

Despite the similarities, GMRS differs from the CB Radio Service in that GMRS licenses are much more restrictive than CB licenses. A GMRS user is generally licensed to operate on one pair of frequencies. A base station is usually licensed to operate in a specific location; the mobile units associated with it, in a defined area. (A license may alternately be granted to operate a station temporarily at unspecified locations within a general area.) Any changes in GMRS equipment--such as number of transmitters, location of fixed equipment, area of mobile operations, antenna height, and operating frequency--must be approved in advance by the FCC.

As in the case for the CB Radio Service, a GMRS licensee must share his assigned frequency with all other licensees on that frequency. Because there are only about 5,000 licensees, however, the problems that result from sharing frequencies are generally much less severe than in the CB Radio Service. The requirement for GMRS operations is, therefore, to complete all transmissions in the minimum practical time, without imposing a specific time limit on individual transmissions. There is no interference from ISM equipment or other non-GMRS users sharing the frequencies.

The frequencies, emissions, and power levels currently authorized for GMRS provide line-of-sight service. Skywave does not cause problems. The availability of repeaters, nevertheless, allows GMRS licensees to communicate over reasonable distances. The use of frequency-modulated (FM) signals, furthermore, provides essentially interference-free communications. Frequencies are assigned systematically and, because of the characteristics of FM systems, the reuse of frequencies outside the area covered by a particular system is excellent. Finally, since GMRS systems tend to be controlled by a dispatcher or other control operator, calling procedures are generally simple and effective.

GMRS equipment has always been significantly more expensive than even the most expensive CB equipment. As a result, GMRS has, to date, attracted a small number of users. Those who operate in GMRS must usually justify their greater expenditures for equipment on the basis of needing the performance available from that equipment. In the past, there have been abuses of Citizens Radio Service Class A stations, which have become GMRS stations. These abuses seem to have ceased, however, with the development of the CB Radio Service, which is much more subject to casual use (and abuse). In fact, GMRS now appears primarily to attract businesses and government entities.

On balance, GMRS offers the user the technical characteristics of other land mobile services that transmit frequency-modulated signals at sufficiently high frequencies to avoid skywave propagation. In some areas GMRS may have channels available, which can supplement those available in the Public Safety Service or the Local Government Service. Because of the absence of operator licensing requirements, GMRS is an easy service to get into and to use. GMRS use does not provide the government user any protection from other users. Because of these advantages and limitations, GMRS may offer interesting benefits as a control channel used by volunteer CB groups recruited and trained by local civil preparedness agencies to support civil preparedness operations.

The review of current CB Radio Service and GMRS characteristics contained in this chapter provides a basis for further consideration of applications of these services to civil preparedness operations. The details of these applications are developed in subsequent chapters of this report.

CHAPTER III

EVOLUTION OF PERSONAL RADIO SERVICES

The Citizens Band Radio Service and the General Mobile Radio Service (GMRS) described in Chapter II are the current manifestations of the Citizens Radio Service (CRS). In the three decades that have elapsed since the inception of CRS, the original concepts have undergone extensive--and often dramatic--changes. In order to understand the capabilities and limitations of the CB Radio Service and of GMRS, it is helpful to review the development of these services to date. This review also helps to anticipate some of the potential future developments in personal radio.

1. REGULATORY HISTORY[1]

World War II saw the development of innovations in communications and electronics, which markedly expanded both the available radio spectrum and the applications for it. During 1944 and 1945, the FCC conducted hearings on allocating the expanded spectrum, which would become available after the cessation of hostilities. Recognizing the utility of two-way radio communications to persons not otherwise eligible to use any of the then existing radio services, the Commission decided to establish the Citizens Radio Service. The FCC anticipated that the new service would ultimately have up to a hundred channels serving millions of ordinary citizens in the course of their day-to-day activities. At least one FCC Commissioner envisioned a telephone-like service using low-cost, portable transceivers, which resembled civilian versions of the World War II walkietalkie.[2]

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1 Preparation of this section was materially assisted by Nick Retson, who is completing a dissertation on CRS in partial fulfillment of the requirements for a master's degree from the University of Wisconsin, Madison, Wisconsin.

2 E. K. Jett and Girard Chaput, "Phone Me by Air," Saturday Evening Post, Vol. 218, No. 4, July 28, 1945, p. 16.

1.1 CREATION OF THE CITIZENS RADIO SERVICE

In 1945, several experimental licenses were granted for the CRS in the vicinity of 250 MHz. Finally, in 1947, as part of its allocation of the spectrum between 10 kHz and 30 GHz, the FCC assigned the band from 460 to 470 MHz to CRS.[1] These frequencies were selected in the anticipation that equipment operating on them would be inexpensive, compact, and portable. During the same year the FCC promulgated Rules and Regulations for the CRS, establishing two classes of stations within the service:[2]

- Class A--Fixed operation on 460-462 MHz, fixed or mobile operation 462-470 MHz, all at 50 watts plate input power
- Class B--Fixed or mobile operation on 462-468 MHz at 10 watts plate input power

Amplitude, phase, or frequency modulation were authorized for voice, telegraphic, teletypewriter, and facsimile transmissions. The Rules and Regulations, in addition to specifying the technical characteristics of the two classes of stations, also defined the purpose of CRS as providing private, short-range communications, radio signalling, and radio control of models and other devices. In 1952, the FCC added Class C stations to CRS; these stations were specifically authorized for the remote control of models and other devices.[3] (In 1968, the FCC terminated Class B of the CRS, effective in late 1971.[4] Termination was justified on the basis of the limited popularity of Class B equipment

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[1] FCC, Allocation of Frequencies in the Radio Spectrum from 10 Kc to 30,000 Kc, Order on Docket 6651, 39 FCC 33, April 10, 1947.

[2] FCC, Promulgation of Rules and Regulations Governing the Citizens Radio Service, Order on Docket 8449, 42 FCC 184, October 23, 1947.

[3] FCC, Establishing Class C of the Citizens Radio Service, Order on Docket 10086, 42 FCC 219, February 14, 1952.

[4] FCC, Reallocation of Frequencies in the 450-470 Mc/S Band, Second Report and Order on Docket 13847, 11 FCC2d 648, February 7, 1968.

and its high cost and marginal performance. Class C falls beyond the scope of this report and will not be discussed further.) Despite anticipations at the inception of CRS, equipment for the service was costly, and the number of licensees grew slowly; by 1958 only about 40,000 licenses had been granted for all three classes of services, most of them in Class C.

1.2 AUTHORIZATION OF CLASS D STATIONS

In 1958, the FCC authorized Class D stations in the CRS.[1] Class D became known as Citizens Band, or CB, and evolved into the CB Radio Service described in Chapter II, Section 1. The frequencies originally allocated correspond to CB Channels 1 through 23. These frequencies had originally been allocated to the Amateur Radio Service, and were known as the 11-Meter Band. The frequencies, emissions, and power levels authorized for Class D stations were recognized as imposing the obstacles to effective communications discussed in Chapter II. The FCC acknowledged at its inception that CB was established on a sufferance basis for those persons and organizations that would not otherwise have access to radio communications.[2] The Rules and Regulations governing the use of Class D stations imposed few restrictions. By implication, however, they did prohibit hobby uses, experimentation, transmissions over long distances, and chance contacts with unknown persons, which were among the activities allowed in the Amateur Radio Service.

The frequencies allocated for Class D stations were selected more realistically than the Class A and Class B frequencies had been to permit the use of less expensive transceivers than were available for the earlier classes of stations. License applications grew from a rate of 600 per month in 1959 to a monthly

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[1] FCC, Complete Revision of Part 19, Rules Governing the Citizens Radio Service, and Reallocation of Frequencies in the Range 26.96 - 27.23 Mc from the Amateur Radio Service (Part 12) to the Citizens Radio Service, Second Report and Order on Docket 11994, 42 FCC 874, August 4, 1958.

[2] J. J. Renner, A Survey and Analysis of Citizens Radio Service, Advanced Technology Systems, Inc., April 23, 1971, p. I-5.

rate of 17,000 per month in 1964. By the end of 1964, there were a total of almost 700,000 Class D licenses in force.[1] The increasing number of Class D licensees led to the development of CB clubs and organizations. Some of these were oriented toward public service. In 1963, the Hallicrafters Company, which manufactured amateur and CB radio equipment, organized the Radio Emergency Associated Citizens Teams, or REACT. REACT recruited and trained volunteers to monitor Class D channels and respond to emergency calls and requests for travelers' assistance. Some clubs and organizations were oriented toward policing Class D practices in the same way that radio amateurs policed the Amateur Radio Service. Others had more social and recreational functions. The growth of CB also stimulated the publication of special interest magazines, S9 (now CB Radio/S9) was first published in 1962; CB Magazine, in 1964.

An increasing number of Class D licensees also produced an increasing number of complaints about CBers. Hobby activities akin to those allowed to radio amateurs proliferated. The use of handles (or nicknames) instead of call signs became common. The FCC lacked adequate manpower to enforce its Rules and Regulations; enforcement was, furthermore, impeded by the anonymity conferred by the use of handles. At least one FCC commissioner threatened to withdraw the frequencies allocated to Class D stations.[2] The FCC unofficially estimated that [illegible]0 percent of all Class D operations were contrary to the intent of the Commission.[3]

1.3 TIGHTENING AND ENFORCEMENT OF CLASS D RULES AND REGULATIONS

In 1960, the FCC responded to hobby-type activities by revising the CRS Rules and Regulations primarily for Class D stations.[4] The revision explicitly prohited communications not related to business or personal matters. The revised

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[1] FCC, Annual Report for Fiscal Year 1964, 1965, p. 99.

[2] Commissioner Fredrick W. Ford quoted by Edwin Frederick, "Washington Outlook," S9, Vol. 1, No. 5, November 1962, p. 57.

[3] P. T. Pogue, "10-8," CB Magazine, Vol. 1, No. 6, July 1964, p. 8.

[4] FCC, Amendment of Part 19, Citizens Radio Service, to Redefine the Permissible Communications in that Service..., Report and Order on Docket 12987, 42 FCC 999, February 10, 1960.

Rules and Regulations defined the primary purpose of CRS communications as exchanging information between units belonging to the same licensee; these types of communications were restricted to the shortest possible transmission times. The revisions defined the secondary purpose of the service as exchanging substantive information on business and personal activities between units belonging to different licensees; these transmissions were limited to 5 minutes, followed by a 2-minute silent period. All Class D communications were restricted to ground wave coverage; intentional use of skywave and transmissions of amateur-type calls intended to elicit responses from random or unknown stations were prohibited. Also prohibited were using the CRS to: (1) violate any law, (2) carry communications for profit, (3) transmit program material for direct retransmission over broadcasting stations, or for direct dissemination over public address systems, (4) transmit material intended solely for amusement or entertainment purposes, or (5) interfere with stations transmitting information involving the immediate safety of life or the protection of property. Exceptions to most CRS restrictions were established for stations operating during severe emergencies in which normal communications were disrupted or inadequate.

In 1965, in response to continued violations, the FCC further revised the Rules and Regulations for Class D stations.[1] The revision clarified and reemphasized prohibitions on hobby-oriented communications; imposed a 5-minute limit on a single communication, followed by a 5-minute silent period; restricted communications between different licensees to seven specified channels; and limited communications to distances of 150 miles or less. During the late 1960s, the FCC extended its tightening of CB Rules and Regulations to CB equipment, placing tighter restrictions on equipment performance. The imposition of tighter technical standards has continued and intensified.[2]

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[1] FCC, Amendment of Part 19 (Now Part 95) Citizens Radio Service, to Revise Subpart D, Station Operating Requirements, and to Make Other Changes, Report and Order on Docket 14843, 42 FCC 1195.

[2] "FCC Amends CB Class D Transmitter Rules," Electronic News, Vol. 18, No. 946, October 22, 1973, p. 21; Eric Schimmel, "The Washington Scene: There'll be Some Changes Made," IEEE Newsletter, February 1970, pp. 19-20.

Tightened Rules and Regulations reduced neither the number of CBers nor the number of violations. FCC District Offices were unable to police violators effectively. They were understaffed; FCC monitoring stations covered limited areas; and most CBers continued to use handles instead of their call signs. In 1968, under the prodding of the Office of Management and Budget, the FCC experimented with the Pilot Enforcement Program (PEP).[1] PEP used teams of engineers to conduct enforcement strikes in various areas. During a strike, a team would set up in a target community without announcing its presence to local CBers. Team members, using portable monitoring and radiolocation equipment, would identify and locate violators. They would then make their presence known, inspecting the locations from which the violators were operating. Finally the team initiated action against the violators. PEP displayed a continuing effect on CBers, holding down violations in a community for a period of time after the strike team had left the community. Based on the PEP test, the FCC recommended the creation of 13 Special Enforcement Facilities (SEF) across the country, each staffed with eight engineers and two clerks. Budgetary limitations, however, constrained the effort. Four SEFs were set up in 1973 and 1974; another was created in 1977. (No additional SEFs are presently planned.)

1.4 RESERVATION OF CHANNEL 9

At the request of REACT and other CB organizations, whose members monitored CB channels to receive emergency calls and to provide assistance to travellers, the FCC amended the Rules and Regulations in 1970 to authorize these actions.[2] It also reserved Channel 9 for emergency communications and travellers' assistance. This amendment legalized a practice, which had been carried out effectively and responsibly by REACT and other monitoring organizations, but which was, nevertheless, contrary to existing regulations. The ramifications of this change proved to be far-reaching; for the first time, the FCC sanctioned communications among unknown parties.

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[1] FCC, Enforcing Citizens Radio Regulations: Conventional Enforcement Techniques, FCC/FOB/PD&E 76-01, April 1976, pp. 2-4.

[2] FCC, Amendment of Section 95.41(d) of the Commissions Rules to Reserve a Citizens Radio Frequency for Emergency Communications, Report and Order on Docket 18705, 22 FCC2d 635, July 24, 1970.

1.5 PROPOSED CLASS E SERVICE

In 1973, the FCC initiated rule-making proceedings intended to authorize Class E stations.[1] Class E stations were proposed to operate on 80 FM channels derived from 2 MHz of spectrum to be withdrawn from the 220-225 MHz band assigned to the Amateur Radio Service. Specific channels were proposed for various uses such as intrastation, interstation, business, weather advisory, marine, traffic control, and emergency communications. Most Class E stations were to be operated at 25 watts power output; a few channels were to be reserved for 1-watt local-use stations; and some public safety agencies would be authorized to operate at 100 watts in emergencies.

1.6 REVISION OF CLASS D RULES AND REGULATIONS AND ENFORCEMENT TECHNIQUES

In response to the rampant growth of CB in the mid-1970s, and the consequent increase in traffic and violations of the FCC Rules and Regulations, the General Accounting Office, the investigative arm of Congress, reviewed FCC regulatory and enforcement procedures.[2] Congress initiated this review in response to the many CB complaints congressmen were receiving. In addition, the FCC initiated another series of revisions to the CB Rules and Regulations. In 1975, casual communications between CBers were removed from the list of uses prohibited on CB; the quiet period between transmissions was reduced from 5 minutes to 1 minute; all 23 channels were opened to interstation communications, but Channel 11 was specifically reserved as a calling channel; and the mandated use of call signs was simplified to require the caller to state only his own call sign. All of these changes were designed to facilitate--or perhaps, more correctly, to legitimize--the casual interstation communications, which preoccupied most CBers. Also in 1975, as a result of a separate review of its license fee structure, the FCC reduced the cost of a CB license from $20.00 to $4.00 for each 5-year period.

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[1] FCC, In the Matter of the Creation of a New Class of Citizens Radio Service..., Notice of Inquiry and Notice of Proposed Rule Making, Docket 19759, FCC 73-600, June 12, 1973.

[2] General Accounting Office, Actions Taken or Needed to Curb Widespread Abuse of the Citizens Band Radio Service: Report to Congress by the Comptroller General of the United States, GGD-78-88, October 14, 1975.

The FCC also undertook a new evaluation of its enforcement techniques starting in 1975.[1] As part of that evaluation, a violation baseline was established for eight cities chosen for the evaluation effort. As indicated in Table 3-1, virtually all CB communications were in violation of the Rules and Regulations.

Table 3-1. Violations Baseline for 8 Cities (June 1976)

Time of Day	Operators In Violation (%)	Operators Not Using Call Sign (%)
AM	94.9	92.9
PM	95.3	94.6
AM & PM	95.0	93.9

Source: FCC, Enforcing Citizens Radio Regulations..., p. 14.

CBers often failed to use their call signs, but their violations were frequently more extensive than simply omitting call signs. In the FCC evaluation, cost-effectiveness analyses were performed for a variety of enforcement team sizes (two, four, and six persons) and enforcement rates (continuous, one strike and two strikes every six months). The evaluation concluded that CB violations were reduced most cost-effectively by using four-person teams and making two strikes in the same community within a 6-month period. A subsequent evaluation considered the cost-effectiveness of this recommended strike approach and of various alternative techniques: education, criminal sanctions, and combined education and administrative sanctions.[2] Of these alternative techniques, the most cost-effective was using criminal sanctions with extensive media coverage of the actions taken against violators. As a result of these evaluations, the FCC has reduced the size of its strike teams. Interestingly, because of budget and manpower limits, the Commission has not been able to mount follow-up strikes. The FCC has also intensified the use of criminal sanctions as a means of penalizing flagrant violators.

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[1] FCC, Enforcing Citizens Radio Regulations, pp. 8-13.

[2] FCC, Cost-Effectiveness of Alternative Compliance Techniques for the Citizens Radio Service, FCC/FOB/PD&E 77-01, May 1977, pp. 5-14.

As the boom in CB continued, attempts to secure CB licenses encountered delays of months. In 1974 and 1975, unlicensed CB operators grew to about 40 percent of all CBers.[1] Enforcement of FCC Rules and Regulations grew increasingly difficult, partially because of long-standing difficulties in identifying CB operators behind their handles. To ease the licensing jam, the FCC improved its processing of CB license applications and made provisions for CBers to obtain a temporary permit to operate CB equipment, including selfassignment of an interim call sign.

1.7 CHANNEL EXPANSION

In 1976, the revisions to CB Rules and Regulations continued. To reduce channel congestion, the number of channels available to CBers were increased, effective January 1, 1977, from 23 to 40.[2] To reduce interference, the Commission significantly tightened technical specifications for the new 40-channel transceivers and banned the sale of 23-channel transceivers as of December 31, 1977. The reservation of Channel 11 as a calling channel was voided because it did not conform to CB practice.

The Rules and Regulations were also recompiled to separate provisions governing Class A, Class C, and Class D stations, which had been intermixed over the years, making comprehension difficult, especially for the unskilled CBer.[3]

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[1] Meeting with J. B. Young, Enforcement Division, Field Operations Bureau, FCC, October 2, 1977.

[2] FCC, Revision of Operating Rules for Class D Stations in the Citizens Radio Service, Second Report and Order on Docket 20120, 41 FR 32678, August 4, 1976.

[3] FCC, Class D Stations in Citizens Radio Service: Revision of Operating Rules, Third Report and Order on Docket 20120, 42 FR 8326, December 16, 1976.

In conjunction with this recompilation (and to make the nomenclature more compatible with existing usage), the Citizens Radio Service was renamed the Personal Radio Services; and the component classes were renamed the General Mobile Radio Service, the Radio Control (R/C) Service, and the Citizens Band Radio Service.

In addition, a court decision in late 1975 voided the FCC license fee schedule as arbitrary and unrelated to the value of licenses. In response, effective January 1, 1977, the FCC eliminated all fees, including those for CB licenses, pending development of a rational fee schedule. Unlicensed CB operators have since been estimated to be less than 10 percent of all CBers.[1] In another attack on illegal operations, the FCC banned the manufacture of amplifiers for use with CB transceivers.[2]

1.8 PLANNING FOR THE FUTURE

The FCC has taken several measures to prepare for the future. With near-term improvement of the CB Radio Service as a primary goal, the Commission created the Personal Use Radio Advisory Committee (PURAC). It is composed of representatives of the CB industry, journalists who write about CB, and representatives of CB users. It is organized into 10 task areas:[3]

1. Operator Training Programs--training methods and programs for CB operators
2. Technical Standards--material to be included in and the organization of the technical regulations subpart of the CB Rules and Regulations

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[1] [FCC], Survey - September 18, 1976, n.d.

[2] "FCC Backs Linear Amp Ban," Electronic News, Vol. 22, No. 1119, February 14, 1977, p. 13.

[3] Ray Newhall, "CB Scene: PURAC--A Voice for CB'ers," Popular Electronics, Vol. II, No. 2, February 1977, p. 85.

3. Part 95 Readability--reorganization and rewrite of the CB Rules and Regulations for improved readability

4. Disseminating Information--means of distributing information on CB quickly, economically, and accurately

5. User Rule Compliance--methods for improving CBers' compliance with the Rules and Regulations

6. Electromagnetic Compatibility--susceptibility requirements and interference limits for achieving compatibility between CB transceivers and other electronic devices

7. Public Safety Uses of Personal Radio--changes to the CB Rules and Regulations necessary to increase the contributions of CB to public safety

8. Equipment Theft--methods for reducing the number of CB transceivers stollen

9. Local Interference Problems--solutions to on-going complaints of interference produced by CB transceivers

10. Personal Use Radio Communications Needs--current and future requirements for two-way radio communications among the members of the general public

Note that no task group is concerned with disaster services. PURAC task area members all serve on a voluntary basis; they receive support from FCC staff members. PURAC met first in May 1976. It is scheduled to cease operation in April 1978. Task areas have made numerous proposals, many of which will be forwarded to the FCC.

PURAC has already had an impact. The readability of CB Rules and Regulations has produced a completely redrafted, highly readable version of the Rules and Regulations, including a few substantive changes. This draft was submitted

to the public in 1977 for comment prior to possible adoption by the FCC.[1] In addition, members of Task Area 4, which is concerned with getting information to the public, have assisted in the preparation of a video tape on CB and on CB-generated television interference. On the recommendation of Task Area 8, whose members are concerned with reducing thefts of CB transceivers, engraved serial numbers have been required on all CB sets manufactured since the beginning of 1977. Among pending ideas of potential interest to DCPA and other public safety and emergency services organizations is the concept, being explored by members of Task Area 5, of using volunteer CBers (and possibly state and local government agencies) to assist in the enforcement of CB Rules and Regulations.

With the long-term growth of Personal Radio Services as a primary goal, the FCC also created the Personal Radio Planning Group.[2] The Personal Radio Planning Group, in contrast with PURAC, consists of FCC staff personnel. It is looking at the possible future creation of a new service in the Personal Radio Services. In an attempt to avoid the limited user acceptance of the GMRS and to impose more discipline on users than has been possible in the CB Radio Service, the Personal Radio Planning Group has undertaken a detailed and systematic study of potential user needs and technical capabilities. The Planning Group's efforts include:

1. Evaluating spectrum alternatives based upon spectrum loading, potential television interference, and cost to relocate present users to new spectrum
2. Measuring user satisfaction with the CB Radio Service and projecting demand for future services

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1 FCC, Citizens Band (CB) Radio Service: Proposed Rewriting of Regulations, Proposed Rulemaking on Docket 21318, 42 FR 37304, June 30, 1977.

2 R. S. Stone, Personal Radio Planning at the Federal Communications Commission, FCC, n.d.[1977].

3. Predicting the quality of service potentially available from various service alternatives

4. Estimating the cost and availability of equipment for these alternatives

5. Projecting other factors that determine the availability of the services under consideration, including the time needed for international coordination, changes in legislation (if any), and FCC rule-making procedures

6. Modelling interference with other services to avoid problems similar to those with CB-generated television interference

7. Developing compliance and enforcement procedures designed to encourage user compliance and to simplify enforcement against users who are not in compliance with the Rules and Regulations

8. Assessing social, economic, and political impacts of each alternative service

9. Developing recommendations for possible implementation by the FCC

On the basis of the first of these tasks, the Personal Radio Planning Group is considering alternative services using spectrum in the 222-224 MHz, 894-902 MHz, and 928-947 MHz bands.[1] (Also available for possible CB use is 0.65 MHz of spectrum in the 26.95-30 MHz band, but expansion into this spectrum is not considered desirable.[2]) In order to clear the way for possible action by FCC, the proposal to authorize Class E stations has been terminated.[3]

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[1] [FCC], Spectrum Alternatives for Personal Radio Services, n.d. [1977], pp. 5-6.

[2] "FCC Proposes New Radio Bands," Electronic News, Vol. 21, No. 1110, December 13, 1976, p. 24.

[3] FCC, In the Matter of the Creation of a New Class of Citizens Radio Service..., Memorandum Opinion and Order, Docket No. 19759, FCC 77-682, October 18, 1977.

FCC staff members believe that there has been a levelling off or even a reduction in the amount of traffic on CB channels.[1] Staff members speculate that the novelty of chattering over the radio may have worn off and that CB owners are using their transceivers for more serious purposes such as reporting emergencies and calling for emergency assistance. While the FCC could issue many more citations for CB violations, if it had more enforcement personnel, FCC staffers believe the level of compliance with the Rules and Regulations has improved. There is no quantitative information on the current number of violations; their assessments are based on observed reductions in the productivity of enforcement personnel, who now identify and locate fewer violators during a sweep than they did during sweeps several years ago.

1.9 OUTLOOK FOR NEW DEVELOPMENTS

The FCC appears likely to continue loosening the operating restrictions on CBers, trying to accord with existing practice to the greatest extent possible. It will, however, insist upon basic operating procedures such as using call signs, taking action against the most flagrant and protracted violators in an effort to maintain at least minimal discipline among the majority of CBers. The FCC is also likely to press manufacturers to produce transceivers with acceptable technical performance levels especially in those characteristics that can interfere with use of the CB Radio Service and with other uses of the spectrum (especially television reception). In addition, the FCC will continue to restrict or prohibit the production and distribution of CB accessories (such as linear amplifiers), which increase interference, support long-distance communications, or other produce other unacceptable operational and technical performance.

[1] Meetings with J. B. Young, Enforcement Division, and Abe Sickle, Chief, Violations Division, FCC, November 2, 1977.

2. DEVELOPMENT OF CB USE

When the FCC authorized Class D stations, interest in them, as reflected by the number of licensees, grew rapidly. By 1962, four years after the creation of the new class, the number of licensees reached 300,000. By 1968, the FCC had granted over 800,000 licenses. Interestingly, growth of CB stabilized at about this level until 1974, when the number of licensees grew at a rate that has made CB a social and economic phenomenon. At present, there are in excess of 12-million licensees who own more than 25-million transceivers.[1] Over 14 percent of American families and 20 percent of farm families use CB.[2] CB sets are installed in 10 percent of passenger cars, 44 percent of recreational vehicles, and 75 percent of long-haul trucks.

2.1 CB BOOM--CATALYSTS AND CAUSES

The catalysts for the CB boom are well known. In 1973, diesel fuel and gasoline were in short supply. The shortages resulted from the oil boycott against the United States and other industrialized nations by the Organization of Petroleum Exporting Countries. Congress mandated a speed limit of 55 miles per hour in an effort to reduce fuel consumption. Truckers used their CB sets to locate fuel supplies and warn each other about the presence of state highway patrol officers and other traffic enforcement personnel. Truckers also used their CB sets to coordinate a number of spectacular traffic jams on the interstate highways to protest fuel shortages and speed limits. The print and broadcast media discovered CB, and suddenly a relatively obscure two-way radio service attracted the nation's attention.

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[1] Electronic Industries Association, Fact Sheet: Citizens Band (CB) Two-Way Radio, May 1977. EIA estimates that each licensee owns an average of two transceivers.

[2] According to Electronic Industries Association estimates, which may be low. A recent survey conducted for the FCC indicated that CBers were found in 17.6 percent of the households in a random sample. B. E. Goodstadt, et al., Implementation of User Demand and Satisfaction Model for Personal Radio Service, Advanced Research Resources Organization, October 1977, p. 36.

The reasons CB became a national fad are somewhat harder to determine. A number of explanations have been put forward for the public's positive response to media coverage of CB. Perhaps the simplest is based on the evident utility of communicating from vehicle to vehicle, especially when the communications could save the cost of a traffic ticket. Cybernet Electronics Corporation, Kawasaki, Japan, the leading Japanese manufacturer of CB transceivers, claims to have done a market survey; apparently before the oil boycott, to determine why CB was not growing faster in the United States. The survey showed that a significant market existed for personal communications, but many potential buyers believed that two-way radio was too complicated, unreliable, and costly for them.[1] The truckers triggered the boom by demonstrating that CB can serve nontechnical users. The consequent expansion of the market reduced prices on CB transceivers, while solid state technology, which helped reduce prices, also improved set reliability.

Other explanations are more complex. One theory holds that the long-haul trucker is the latest American folk hero.[1] Certainly the colorful trucker's argot contributes to this image. The nontrucker is fascinated with a world in which long-haul trucks are "eighteen wheelers," state troopers are "Smokey Bears," travelling at full trottle is "putting the pedal to the metal," traffic tickets are "green stamps," and other common things and actions are described in similarly colorful language, which disguises their mundane nature. It has also been suggested that Americans were secretly delighted with the truckers' ability to slip by Smokey and that they also wanted to put one over on him.

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[1] "Probing the News: Cybernet Expects to Stay on Top," Electronics, Vol. 49 No. 23, November 11, 1976, p. 80. The date of the survey and other details are not provided.

[2] David Snell, "Truckers Roll Their Subculture into the Artic," Smithsonian, Vol. 7, No. 3, June 1976, pp. 67 ff.

Another explanation of the CB boom is that highly mobile Americans are seeking to develop community with others through their vehicles and their two-way radios.[1] This explanation treats our contemporary automobile-dependent society as one in which people have lost their conventional ties to place and family. Mobility may confer on the individual the ability to find an alternate community based upon his own particular interests. The addition of CB to this situation provides an easy way in which the user can reach out to identify and associate with other persons who share common interests, specifically their use and enjoyment of CB communications.

These explanations are interesting not because any one of them provides the definitive explanation of why the boom in CB sales occured. Rather they are interesting because they suggest that CB use satisfies deep-seated needs. As such, CB (and possibly new forms of personal communications) are likely to continue as significant components of American culture after the faddish aspects of the CB boom have passed.

2.2 NUMBER OF CB LICENSES

Table 3-2 indicates the cumulative annual growth of CB licenses during the period from 1968 through 1977. (The table also includes the small percentage of R/C Radio Service licensees.) Following a slight downward trend from 1970 through 1973, the number of licenses increased by 11 percent from June 1973 to May 1974; 191 percent from June 1974 to May 1975; 85 percent from June 1975 to May 1976; and 109 percent from June 1976 to May 1977. Over the 10-year period, CB licenses increased by more than 1,100 percent! Figure 3-1 shows the FCC's monthly receipts of CB license applications during the period 1973 through 1977.

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[1] H. R. Kerbo, et al., Re-establishing Gemeinshaft: An Examination of the CB Radio Fad, paper presented at the annual meeting of the Southwest Social Science Association, Dallas, Texas, April 1977, pp. 12-18; Carey Hershey, et al., "Personal Uses of Mobile Communications: Citizens Band Radio and Local Community," Raymond Bowers, et al., in Communications for a Mobile Society: An Assessment of New Technology, Sage Productions, Inc., Beverly Hills, California, 1978, Chapter 9.

Table 3-2. 10-Year Growth of Selected Two-Way Radio Services (in Thousands)

Service	1968	1969	1970	1971	1972	Year* 1973	1974	1975	1976	1977	10-Year Growth
Public Safety	63	68	76	58	66	75	83	101	105	114	81%
Marine	164	186	210	219	238	239	243	263	262	296	81%
Amateur	283	285	282	286	284	280	274	282	290	339	20%
CB Radio**	868	861	889	868	852	837	932	2,716	5,038	10,532	1,114%

*Totals are for May of each year
**Includes R/C Radio Service licenses

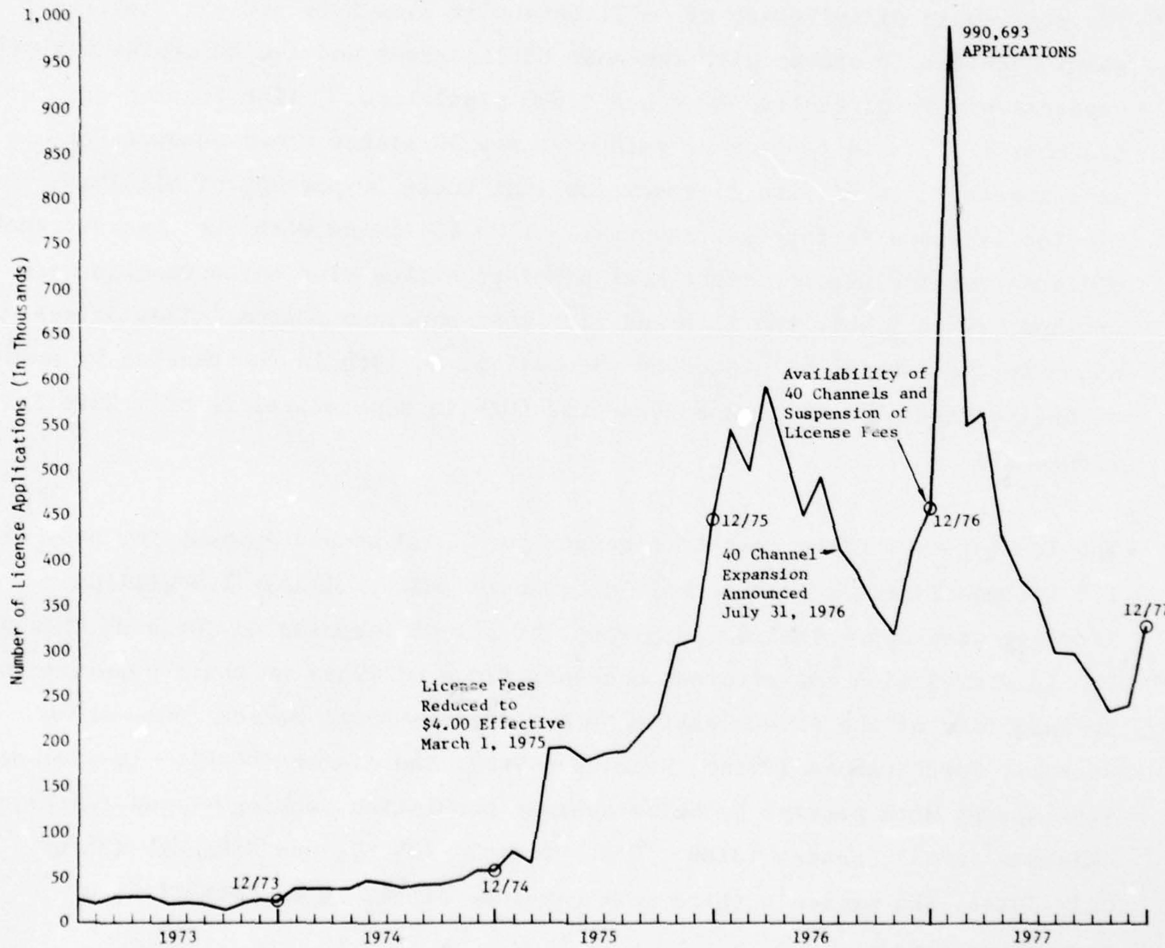
Source: K. M. Bourne, "Two-way Radio Take Off!" Communications News, Vol. 14, No. 8, August 1977, p. 29.

Table 3-2 also shows licensees in three other services selected for comparison--Public Safety, Marine, and Amateur. The Public Safety Radio Service is used by government agencies. The Marine Radio Service is used by businesses involved in shipping and other maritime activities; it is also used by the more serious pleasure boaters, and has seen some increase, especially among this latter group of users. Finally, the Amateur Radio Service is restricted to noncommercial users. The American Radio Relay League (ARRL), the major organization representing radio amateurs, considers the Amateur Radio Service to be booming. It has experienced a 10-year growth of 20 percent. (Most of this growth is attributed by ARRL officials to persons exposed to two-way radio through CB, who have opted for amateur licenses to escape the congestion, poor technical performance, and spotty discipline of the CB Radio Service.)[1] The Public Safety and Marine Radio Services have demonstrated rates of 81 percent growth over the last 10 years.

[1] Meetings with George Hart, Ellen White, Charles Harris, ARRL, Newington, Connecticut, September 13, 1977.

Many of the other two-way radio services have shown similar growth rates. No two-way radio service has, however, even remotely approached the growth rate of the CB Radio Service.

In all of the two-way radio services regulated by the FCC, as of May 1977 there were 11.8-million licenses in force. Of these, 10.5-million (or 89



Source: FCC, Personal Radio Service - Monthly Application Receipts, CB, R/C, and General Mobile Applications, n.d. [January 1978].

Figure 3-1. Monthly Receipt by FCC of Applications for Licenses

percent) were in the CB Radio Service (including a few in the R/C Radio Service).[1] At that time, approximately 22-million transceivers were operating in the 400 kHz available for CB use, which is a tiny fraction of the more than 600 MHz of spectrum allocated to two-way radio communications. While there is severe CB channel congestion in many areas, there is no other two-way radio service in which the users make such intensive use of spectrum.

2.3 DISTRIBUTION OF CB LICENSEES

The geographic distribution of CB licensees is also interesting. Table 3-3 shows both the 10 states with the most CB licensees and the 10 states with the greatest number of CB licensees per 1,000 population.[2] (The figures are for December 1977.) In the former category, the 10 states shown account for approximately 5.4-million licenses (or just under 50 percent of all 10.9-million licenses in force at the time.) The 10 states with the greatest number of licensees include the eight most populous states plus North Carolina and Indiana, respectively the 11th and 12th most populous states. (New Jersey, ninth in the ranking of states by population, is 13th in the ranking by number of CB licenses; however, Massachusetts, 10th in population, is only 23rd in CB licenses.)

The 10 states with the most CB licenses per 1,000 people account for only about 1.9-million licenses, almost half of them in Texas. (These 1.9-million licenses were approximately 18 percent of all CB licenses in force at the time.) The 10 states with the greatest concentrations of CBers in their populations include four of the seven least populous states--South Dakota (44th of 50 states), North Dakota (45th), Wyoming (49th), and Alaska (50th). It includes five states with average to below average population rankings--Iowa (25th), Oklahoma (27th), Kansas (31th), West Virginia (34th), and Nebraska (35th). Only Texas, the nation's third most populous state, is on both lists of

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[1] K. M. Bourne, Op. Cit., p. 28

[2] See Appendix D for a complete listing of CB licenses by states and CB licenses per 1,000 population, also by states.

Table 3-3 (and the population of Texas is relatively thinly distributed over the state's large land area).

Table 3-3. Selected Distributions of CB Licenses

CB Licenses by State			CB Density per 1,000 People		
Rank	State	Number of licenses*	Rank	State	Licenses per 1,000**
1	Texas	910	1	Wyoming	89
2	California	659	2	South Dakota	89
3	Ohio	622	3	Oklahoma	77
4	New York	547	4	North Dakota	76
5	Pennsylvania	544	5	Alaska	76
6	Illinois	543	6	West Virginia	76
7	Michigan	483	7	Kansas	76
8	Florida	451	8	Negraska	74
9	Indiana	331	9	Texas	74
10	North Carolina	316	10	Iowa	73

*Rounded to the nearest 1,000
**Rounded to the nearest whole number

Source: FCC license statistics assembled by the Citizens Band Radio Project, Denver Research Institute, Denver, Colorado.

Based on the information contained in Table 3-3, it is likely that a large number of CBers can be located in any of the states with large populations. Many of the less populous states may, however, have a large number of CBers in relation to their overall populations. This higher density of CBers in less populous states probably results from CB being a more essential means of communications, as well as a more effective one, in less populous areas. This higher density of CBers, along with the greater effectiveness of CB, probably improves its usefulness in remote areas.

2.4 THE CB BOOM SLOWS

In 1974 and 1975, the demand for CB transceivers grew rapidly. Initially suppliers had to backorder popular models. Manufacturers primarily in Japan, Taiwan, Korea, and Hong Kong increased their CB production capacity. The sale of CB transceivers spread from CB specialty shops and electronics retailers to discount stores, department and chain stores, and automobile accessory stores.

In 1975, the FCC appeared ready to expand the spectrum available to the CB Radio Service, but delayed when the potential for serious intermodulation interference between upper and lower channels became known. The industry, faced with an FCC delay of uncertain duration, continued to expand its production of 23-channel transceivers.[1] In July 1976, however, the FCC determined that CB channels could be expanded from 23 to 40 without causing interference.[2] The FCC implemented the necessary changes to the Rules and Regulations and established procedures to type accept 40-channel transceivers. Because of the time necessary for manufacturers to revise their designs and have them type accepted, the FCC ruled that 40-channel transceivers could not be sold until January 1, 1977, casting a potential pall on CB sales for the 1976 Christmas season. The Commission compounded the problem by precluding the use of external adapters to convert 23-channel transceivers to 40-channel operation. The Commission did, however, allow suppliers to recall and remanufacture 23-channel sets of specified types as 40-channel sets. The CB industry confused potential buyers by suggesting that 40-channel transceivers would not perform as well as 23-channel transceivers.

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[1] "FCC Plan: Expand CB Channels From 23 up to 99-115," Electronics News, Vol. 21, No. 1073, March 29, 1976, p. 31.

[2] Ray Newhall, "CB Scene: 40 Channel Expansion and PURAC II," Popular Electronics, Vol. 10, No. 5, November 1976, p. 94.

CB license applications fell sharply after the FCC's channel-expansion announcement from over 417,000 in July 1977 to a low of about 318,000 in October 1977 (see Figure 3-1). Applications started to recover in November and hit an all-time peak of almost 991,000 in January 1977, possibly influenced by the elimination of license fees as of January 1, 1977. (The number of license applications received in January 1977 was almost twice as many as had been received during the entire year of 1974.) In February, CB license applications fell to approximately 546,000 and the decline continued until October, their lowest level since September 1975. License applications received in November and December showed some recovery.

Price cutting occurred on 23-channel transceivers, starting almost at the time of the FCC's channel-expansion announcement.[1] Price cutting on those sets intensified as the December 31, 1977 deadline for terminating their sale approached, possibly contributing to the November and December 1977 increases in license applications. Initially the prices on 40-channel transceivers held firm, but also fell as a result of price cutting caused by the glut of 23-channel transceivers.[2]

The growth of the market for CB transceivers during the period 1968 through 1977 is shown in Table 3-4. CB transceivers manufactured and imported grew from $36.3-million in 1968 to almost $1.1-billion in 1976. While domestic production figures are not yet available for 1977, they are less than 10 percent of total consumption. The $485.9-million worth of CB imports for that year, therefore, constitutes the lion's share of the market and indicates that

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1 Andrew Czernek and Jack Fraser, "23-Channel CB Oversupply Brings Large Write-Downs," Electronic News, Vol. 21, No. 1106, November 15, 1976, pp. 4, 91.

2 John Crudele and Andrew Czernek, "Firms Cutting Prices on 40-Channel CBs," Electronic News, Vol. 22, No. 1129, April 25, 1977, p. 47.

Table 3-4. Value of CB Transceivers (in Millions of Dollars)

Year	U.S. Shipments*	Imports**	Total
1968	$ 16.7	$ 19.6	$ 36.3
1969	11.7	17.9	29.6
1970	8.4	22.8	31.2
1971	10.2	28.7	38.9
1972	13.4	44.0	57.4
1973	32.1	56.3	88.4
1974	67.6	104.0	171.6
1975	160.2	295.1	455.4
1976	172.2	881.4	1,053.6
1977	†	485.9	†

*Includes accessories
**Customs value. Includes some non-CB VHF marine radio equipment; does not include CB-tape player combinations.
† Not available

Source: Electronic Industries Association, Electronic Market Data Book, 1977, 1977, p. 46; updated in a personal communication from H. L. Johnson, Manager, Communications and Industrial Marketing Services, January 16, 1978.

1977 production and imports were approximately half the 1976 production and imports. The 1976 total figures and the 1977 import figures are, however, inflated by an undetermined number of transceivers which were not sold to the public, but which remained in suppliers' or retailers' inventories.

The overproduction of 23-channel sets appears to have slowed--but not ended--the CB boom. While the industry is suffering (apparently both in the United States and overseas[1]), there were more than 4.9-million new licenses issued in 1977, increasing the total number of CB licensees to 12.4-million, an increase

[1] R. A. Rosenblatt, "U.S. CB Producers Broadcast on SOS," Los Angeles Times, December 2, 1977, pt. I, pp. 1, 10; "U.S. CBs Not Hurt by Imports: EIAJ," Electronic News, Vol. 22, No. 1146, August 22, 1977, p. 68.

for the calendar year of almost 14 percent over 1976.[1] While this is a markedly low rate of growth than in the several prior years, it certainly suggests that the public is still interested in CB.

2.5 FUTURE POTENTIAL

An estimate of the potential market for CB transceivers prepared for the FCC suggests that about 24 percent of all households will eventually use CB.[2] Estimates of future CB sales volumes are currently relatively modest. For example, an executive of a large communications firm is predicting annual sales of 4.8-million units starting in 1979.[3] This projection is significantly lower than the approximately 12-million-unit sales level of 1976. If it is valid, it will have a negative impact on overextended manufacturers. Sales of almost 5-million units a year are, nevertheless, a significant number of new CB transceivers coming into use or replacing older sets. At this sales level, the continuing use of CB for communications among members of the nations highly mobile population is likely to remain an important social force in the foreseeable future. On the positive side, some of the more extravagent aspects of CB communications are likely to be moderated by the reduction in the rate at which new CBers begin to use the 40 available channels. If a new service within the Personal Radio Services is initiated at an acceptable cost and with suitable performance characteristics, this service is likely to be adopted by the public to supplement, but almost certainly not to replace, the CB Radio Service.[4] The conditions that triggered the CB boom are unlikely, however, to recur in the near future, either for the CB Radio Service of for a new service.

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[1] FCC, Personal Radio Services - Monthly Application Receipts, CB, R/C, and General Mobile Applications, n.d. [January 1978]. This percentage increase is appreciably lower than the 109 percent cited on p. III-17, which represents the increase between June 1976 and May 1977, including the January 1977 peak, but only a small part of the subsequent declines.

[2] B. E. Goodstadt, et al., Op. Cit., p. 83.

[3] John Battin, Director of Product Operations, Motorola Inc., quoted in R. A. Rosenblatt, Op. Cit., p. 1.

[4] B. E. Goodstadt, et al., Op. Cit., pp. 86, 91, 97.

CHAPTER IV

FEDERAL PERSONAL RADIO PROGRAMS

Agencies of the federal government have initiated several programs potentially influencing the use of the CB Radio Service (and, to a lesser extent, the General Mobile Radio Service, GMRS) in emergencies. These agencies include:

Defense Civil Preparedness Agency
National Highway Traffic Safety Administration (NHTSA)
U.S. Coast Guard (USCG)
Federal Highway Administration (FHWA)
Law Enforcement Assistance Administration (LEAA)
National Weather Service (NWS)

At present only the activities of NHTSA, in creating the National Emergency Action Radio (NEAR) program, are likely to have a major impact on the development of emergency CB capabilities, the recruitment and training of volunteer CBers, or the deployment of CB equipment in public safety and emergency services agencies. The other agency programs, as they are currently operating (with the possible exception of the NWS SKYWARN program), are likely to have only limited impacts on developing emergency CB capabilities, recruiting and training CBers for emergency service, or deploying CB equipment. Programs of the NHWA may have an impact--probably limited--on the evolution of personal radio technology. The programs of each of these agencies are described briefly below.

1. DEFENSE CIVIL PREPAREDNESS AGENCY

In 1970, following reservation of Channel 9 for emergency communications and travelers' assistance (see Chapter III, Section 1.4), the Office of Civil Defense, predecessor of DCPA, briefly reviewed the implications of the FCC's action. The review was informal and involved the exchange of memoranda among personnel in

OCD headquarters and several of its Region Offices.[1] OCD's review considered the impact of CB both on civil preparedness operations and on agency policy. The memoranda aired both sides of the ongoing controversy over the significance of CB channel congestion and the level of discipline anticipated from CBers. The resolution supported emergency use of both the CB Radio Service and the General Mobile Radio Service. The policy was clarified and restated by DCPA in 1974.[2]

DCPA determined that base stations in both services were to be treated according to existing policy on radio equipment. As with other two-way radio services, DCPA would approve a request for matching funds from a state or local government for the purchase of a base station in either service, if the base station was:

1. Located in an approved emergency operations center (EOC)
2. Covered by an approved emergency communications plan
3. Applied for when funds were available

A GMRS repeater was also subject to matching funds support if it met conditions 2 and 3, above. The government acquiring the base station (or GMRS repeater) must pay 50 percent of its cost. The government cannot use DCPA matching funds

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1 J. W. McConnell, Assistant Director, Plans and Operations, OCD, Memorandum to Regional Director, OCD Region Six, subject: Emergency Communications, August 25, 1970; W. O. Bassford, Staff Director, PO(EO), OCD, Memorandum to K. J. Christenson, PO(DO), OCD, subject: Policy on REACT, August 17, 1970; D. G. Harrison, Regional Director, OCD Region Six, Memorandum to Assistant Director, Plans and Operations, OCD, subject: Emergency Communications, July 23, 1970; and L. J. Hanna, PO(ED), OCD, Memorandum to W. O. Bassford, subject: Evaluation of Channel 9 for Civil Defense, July 31, 1970.

2 J. E. Davis, Director, DCPA, Memorandum for All DCPA Regional Directors, subject: Federal Contributions for Costs of Citizens Band Base Station Radio Equipment, March 29, 1974. This memorandum refers to and quotes a memorandum of September 15, 1970, which initially established OCD policy on CB and GMRS; this earlier memorandum has apparently been removed from DCPA files.

portable transceivers in either the CB Radio Service or GMRS (or in any other two-way radio service).

Radio Emergency Associated Citizens Teams (REACT) was discussed as a specific organization potentially able to support civil preparedness operations. The 1970 policy was cast in terms of REACT participation, but the 1974 revision eliminates specific reference to REACT, indicating the nonexclusive nature of REACT's involvement. The implication of the OCD position on CB and GMRS was that base stations required for communications in these services were either for volunteer support or for communications not available through other media. In the former category, OCD recognized the potential use of volunteers as CB operators. In the latter category, communications from the EOC to fallout shelters and to RADEF monitors were specifically mentioned. Civil preparedness agencies are warned that CB and GMRS may be required to cease operation following a presidential declaration of a national emergency. DCPA has not expended any additional effort on CB or GMRS.

When DCPA communications planning guidance was recently revised and reissued, specific mention of CB and GMRS was omitted, probably because the guidance documents are quite general.[1] As a result, DCPA policy is still stated only in a 1974 memorandum to regional directors. Similarly, DCPA has not drafted any guidance or instructions to state and local civil preparedness agencies on how and when to use CB and GMRS, suitable responses to local REACT teams and other CB organizations that volunteer to provide communications support, and other matters involved in recruiting, training, and managing CB volunteers.

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[1] DCPA, Federal Assistance Handbook, CPG 1-3, December 1976, updated through May 15, 1977, pp. 3-38 through 3-41; DCPA, Emergency Communications, CPG 1-18, January 1977, pp. 1-7.

2. NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

The National Highway Traffic Safety Administration, U.S. Department of Transportation (DOT), has been charged by Congress (under the Highway Safety Act of 1966[1]) with reducing the number of accidents and fatalities occurring in the nation's highways. To further this goal, NHTSA has developed and is implementing 18 Highway Safety Program Standards. Four of these standards either require or at least benefit from communications between the motoring public and public safety agencies. These standards are:

- No. 11 Emergency Medical Services--includes communications necessary for the entry of an accident victim into the emergency medical services system
- No. 15 Police Traffic Services--includes communications necessary for reporting hazardous highway conditions and dangerous driver performance
- No. 16 Debris Hazard Control and Cleanup--includes communications necessary for reporting hazardous conditions, requesting rescue assistance for drivers trapped in wrecked vehicles, and advising drivers of hazardous conditions
- No. 17 Pupil Transportation Safety--includes communications necessary to ensure the safety of children traveling in school busses

2.1 FORMULATION OF CB POLICY

In the process of developing the necessary means of public communications, the NHTSA first established the policy of encouraging state and local governments to adopt the Universal Emergency Telephone Number (911).[2] Subsequently, the

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[1] 24 USC 4.

[2] DOT, "Department of Transportation Policy on Implementation of the Universal Emergency Telephone Number (911) Concept," Policy Order 4540.1 in NHTSA, Citizens Band Communication Manual, Addendum II to Highway Safety Program Manual No. 11, September 1976, Appendix A.

growth of interest in the CB Radio Service caused the agency to evaluate the feasibility of using CB to extend highway safety communications into the motorist's vehicle. In March 1975, NHTSA personnel assigned to this evaluation concluded that, in the absence of a dedicated highway communications system, motorists could use CB for identifying emergencies, reporting them directly from their vehicles, and responding to emergency reports from other CB-equipped motorists and emergency services personnel.[1] NHTSA is currently developing a joint policy statement on CB with the Interstate Commerce Commission, the Federal Communications Commission (FCC), and the Bureau of Motor Carrier Safety, which is another component of DOT. This statement will encourage the use of CB by truckers to promote highway safety.[2]

2.2 DEVELOPMENT OF NATIONAL EMERGENCY ACTION RADIO (NEAR) PROGRAM

Implementation of NHTSA recommendations on CB led to developing the National Emergency Action Radio program, which was formally authorized in November 1976. The program authorized the voluntary participations by any state choosing to do so. Each state receives block grants through NHTSA's Community Grant Program (under Section 402 of the Highway Safety Act of 1966), and it may choose to commit some of these discretionary funds to a state NEAR program.[3] Such action is contingent upon inclusion of NEAR activities in the state's annual work program, which defines the ways in which that state will attack

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[1] [DOT], Use of the Citizens Radio Service for Transportation Safety: Report to the Deputy Secretary, DOT HS-801 760, March 1975, pp. I-7 through I-10.

[2] Meeting with Joseph Bernard, Emergency Medical Services Division, NHTSA, October 31, 1977. The new policy will rescind an earlier policy by the Interstate Commerce Commission, Unlawful Use of Citizens Band Radios by Interstate Motor Carriers, Notice to All Regulated Motor Carriers in Interstate Commerce, October 25, 1977, which was a response to truckers' use of CB to avoid speed limits and other highway safety measures.

[3] NHTSA, Citizens Band Communication Manual, p. v.

its highway safety problems during the forthcoming year. Opting to implement NEAR, however, reduces grant money available for other highway safety programs. Participation in the NEAR program must be justified under one or more of the four applicable Highway Safety Program Standards. Objectives for a state's NEAR program must include the capability to:[1]

- Identify and report highway safety incidents promptly under a range of emergency conditions
- Reduce the response time and increasing the availability of public safety services to motorists
- Enhance citizen participation in highway safety
- Provide an interface between volunteer CB groups and public safety agencies to relay information on and facilitate the commitment of suitable resources to highway emergencies

In order to satisfy these objectives, a state's NEAR program must organize the monitoring of Channel 9 by CB volunteers, public safety agency personnel, or a combination of both. The program must also coordinate among participating emergency services agencies to assure the prompt, effective commitment of emergency resources. State and local civil preparedness agencies are included among the organizations that can participate in a state NEAR program.

2.3 STRUCTURAL AND DISCIPLINE PROBLEMS

NHTSA personnel have recognized that CB, to be effective and to be acceptable to emergency services agencies, must have structure and discipline. The NEAR program is designed to provide such structure and discipline.[2] It does so, however, without creating a new and separate organization (except for advisory councils, which are described below). Instead, NEAR organizes existing

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[1] NHTSA, Citizens Band Communication Manual, p. 2.

[2] Meeting with Joseph Bernard, July 18, 1977.

resources to perform necessary functions; guidance for organizing a particular state's NEAR program is sufficiently general that the capabilities of state and local emergency services agencies and volunteer groups can be adapted (and, if necessary, upgraded) to meet perceived needs.

NHTSA guidance is particularly careful in defining suitable volunteer CB monitoring resources. Specifically, NHTSA recommends that state NEAR plans concentrate on volunteer monitoring groups that:[1]

- Adopt as their primary purpose monitoring Channel 9 on a regular basis
- Enjoy local community support because of their demonstrated capabilities
- Organize on the basis of group operation rather than individual performance
- Subscribe to and operate under FCC Rules and Regulations
- Maintain an active affiliation with a national or state organization capable of coordinating state and local activities with NEAR advisory groups

In order to assist volunteer CB monitoring groups and emergency services agencies in working together, NHTSA has developed and published a Citizens Band Monitor Guide, which defines CB monitoring procedures, including basic data collection techniques.[2] NHTSA has also contracted with REACT to develop a training program, which will include a course guide, an instructor's lesson plan, a student study guide, and an orientation film.[3] The training program is designed for both volunteers and emergency services personnel so that they

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[1] NHTSA, Citizens Band Communication Manual, p. 8.

[2] NHTSA, Citizens Band Monitor Guide, U.S. Government Printing Office, 1976.

[3] Meeting with Joseph Bernard, October 31, 1977.

can develop a mutual understanding of their roles in the NEAR program. The training program is scheduled for completion in 1978 and will receive wide distribution.

2.4 NEAR IMPLEMENTATION PROGRAM

NHTSA suggests a seven-step implementation program for establishing a state NEAR program.[1] The steps include:

- Step 1: *Establish a State-level Organization*. At the state level this organization must have a lead agency responsible for planning, organizing, and coordinating the NEAR program. This organization can be the state police/state patrol agency, the highway department, or the emergency medical services organization. The lead agency is supported by policy and technical advisory committees. The former represents various state agencies, medical services providers, and other interested parties; it helps the lead agency formulate NEAR policies and communicate these policies to local governments and other interested groups. The technical advisory committee includes various communications, emergency services, and data processing specialists; it helps develop a detailed NEAR program and evaluate its effectiveness. A similar advisory structure supports the implementation of NEAR in substate regions, counties, and cities and towns.
- Step 2: Survey Local Emergency Reporting Systems. This step is intended to develop information on the characteristics and operations of various local emergency systems. It provides a basis for subdividing the state into NEAR reporting areas and for establishing procedures for receiving and processing reports within those areas.
- Step 3: Prepare a NEAR Plan and Report. Step 3 assesses and organizes the information collected in Step 2, drafts a plan, and prepares a

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1 NHTSA, Citizens Band Communication Manual, pp. 8-13.

report for review by NHTSA. The plan can be for an entire state or for a portion of the state. If the plan covers less than an entire state, it indicates how and when the NEAR program will be expanded to provide complete coverage, or it establishes why NEAR cannot be expanded. The report describes the proposed NEAR organization, implementation schedules, data requirements, and projected costs. It also describes major problem areas, as well as proposed legislative and administrative actions required to correct those problems.

- Step 4: Establish a Near Data System. Two types of data are required: inventory data and response data. In the former category are the data collected in Step 2 and additional data necessary to give an overall picture of emergency services operations and to keep the inventory up to date. The latter category includes data on the nature and locations of accidents and emergencies; the resources committed to them, the locations from which the resources were committed, and their response times; other critical times from occurrence of accidents or onset of emergencies through their final dispositions; and nature of injuries and damage.

- Step 5: Identify Deficiencies in Local Emergencies Systems. The data system developed in Step 5 permits two levels of deficiency analysis. Inventory data can be used to assess the extent to which communities meet requirements that have already been identified; response data, to identify deficiencies more precisely and to develop more detailed performance requirements than can be done with inventory data alone.

- Step 6: Determine Priorities and Provide Funding for the Support of Local Activities to Upgrade NEAR Monitoring. When deficiencies in local emergency response systems have been identified, the NEAR plan developed in Step 3 is revised to include specific action programs along with the priorities to be applied to each. The revised state plan is then resubmitted to NHTSA with specific requests for funds to implement the plan.

- Step 7: Establish Procedures for Periodic Evaluation of the NEAR Program and Revision of the State NEAR Plan. Effectiveness of the NEAR program requires continuing assessment (and modification, if necessary) of data system inputs and periodic comparison of actual program accomplishments with goals established in the state NEAR plan. NHTSA guidance suggests preparing periodic reports on emergency response capabilities (by community), system response (by various locations and types of emergencies), and deficiency analyses (by area).

In general, the planning process conforms to good planning practice. The data collection and evaluation procedures seem overly complex in relation to the information now collected by most state and local public safety agencies on their responses to traffic accidents and other emergencies.

2.5 AUTHORIZED NEAR PROGRAM EXPENDITURES

The performance of the above planning effort can be funded out of NHTSA Section 403 funds. The completion of the effort through Step 6 is required before other expenditures can be made. In addition to planning and organizing, allowable NEAR program expenditures include[1]:

- Mobile CB Transceivers. Acquisition of mobile transceivers for installation in government vehicles. These transceivers cannot be used for agency mission-oriented traffic or as substitutes for mission-dedicated transceivers. Transceivers must meet minimum performance standards.

- Base Station Transceivers. These include costs and installation charges for transceivers, antennas, antenna leads, speakers, microphones, and other equipment directly related to the operation of

[1] Ibid., pp. 5-6.

CB equipment. Transceivers and other equipment must be installed in locations under the control of government agencies and must meet minimum performance standards.

- Training and Training Materials. A continuous training program is a requirement for all government and volunteer personnel. It can include training in monitoring and radio communications procedures; effective use of CB equipment, handling various types of emergency calls and requests for motorist assistance (including the location and capabilities of public safety resources); and completion of reporting forms.

- Public Information and Education. The NEAR program funds the costs of public information and education, including materials for distribution to the public. This information is intended to familiarize the public with the program and with the accomplishments of individuals and organizations participating in the program. All news media; educational organizations; and civil, professional, and business groups can be included.

- Statistical Data Gathering and Evaluation. The costs of data gathering and evaluation necessary to measure the accomplishments of the program, determine its impact on transportation safety, and guide its future direction can all be funded. NHTSA requires each participating state to prepare and submit an annual evaluation of the NEAR program. The cost of preparing this report is also reimbursable.

- Operating Costs, Expenses, and Staff. Direct administrative costs, including travel expenses, resulting from organizing, implementing, and operating a NEAR program can be reimbursed with Section 402 funds. The cost of operating government facilities made available to volunteer CB monitors can also be reimbursed.

If a state and its local jurisdictions choose to participate in the NEAR program, many of the costs incurred in developing that program, bringing it into operation, administering it, and modifying it to perform more effectively will be reimbursed by NHTSA.

2.6 ILLINOIS NEAR PROGRAM

As of May 1976, 25 states had undertaken some level of NEAR activity.[1] Since the NEAR program was initially authorized late in the cycle of preparing annual work programs, these state efforts have generally been limited to formulating initial plans or to evaluating the feasibility of installing CB transceivers in state police/state patrol vehicles. Only Illinois has completed all the steps in the NEAR planning process and is actually implementing a state NEAR program.[2] The lead agency is the Illinois State Police, which has assigned an officer as full-time project director. The project director is assisted by two full-time staff members. In addition, Illinois State Police officers have been identified as NEAR coordinators in all Illinois counties. In some counties, the coordinators work essentially full-time on NEAR; in others, they work on NEAR as they have time available to do so. The Illinois NEAR plan parallels NHTSA guidance by allowing considerable latitude for organizing regional, county, and local participation in the program. County and local civil preparedness organizations are explicitly identified as eligible to participate. Only in the area of ongoing data collection for performance evaluation is there a significant variation from NHTSA guidance. Specifically, the data collection techniques specified in the Illinois NEAR plan are considerably less sophisticated than those suggested by NEAR program

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[1] Meeting with Joseph Bernard, July 18, 1977.

[2] Illinois State Police, Illinois NEAR Comprehensive Plan, n.d. [1977]; meeting with Cpl. Everitt Bane, Illinois NEAR Project Director, and other Illinois State Police personnel, September 12, 1977.

guidance.[1] NHTSA personnel, however, do not consider the data collection component of the Illinois NEAR plan to be fully satisfactory and expect it to be upgraded.[2] The level of data collection incorporated into state NEAR plans is obviously subject to further definition.

Illinois has been authorized to spend $390,000 for the first year of NEAR operations. Approximately half of this amount is being used by the state to implement its own NEAR program components. The remainder of the first year funding is programmed to equip county and local public safety agencies with CB transceivers and to defray other necessary program costs.

At the state level, NHTSA funds will be used to:[3]

- Fund three staff positions
- Equip all 1,650 Illinois State Police and Illinoise Turnpike cars with mobile CB transceivers and 50 districts and posts with CB base stations
- Equip 60 Secretary of State cars with mobile CB transceivers
- Equip five aircraft with CB transceivers
- Equip about 100 Department of Conservation cars with mobile transceivers
- Maintain a small stockpile of transceivers to replace failed units units until they can be repaired

Personnel from the Secretary of State's office have full powers to enforce highway safety laws; they can also issue citations for overweight loads and collect fines for them. (The Secretary of State's Office will equip an additional 60 cars using state funds.) Department of Conservation personnel

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[1] Illinois State Police, Op. Cit., pp. 64-66.

[2] Meeting with Joseph Bernard, July 18, 1977.

[3] Mike Wendland, "CB Break: Getting Money for Emergencies," St. Louis Globe-Democrat, August 5, 1977, p. 3B; meeting with Cpl. Everitt Bane, September 12, 1977.

have negligible traffic enforcement authority, but communicate on Illinois State Police frequencies and can, therefore, relay CB calls to both State Police cars and dispatchers. At the local level, priority will be given to rural and suburban agencies, since there is already extensive monitoring of Channel 9 in urban areas, and those areas also have a range of other communications facilities available to them.

A number of Illinois NEAR components remain to be developed. One of the NEAR staff persons will be assigned to develop a training program for use throughout the state. Except for a simple one-page NEAR handout, the state also lacks a public information and public education program. Maintenance procedures also remain to be developed. Some preference has been expressed for doing all maintenance in Springfield, where the Illinois State Police has radio technicians; this approach is, however, subject to further review. Agency acceptance is still a problem, since State Police personnel have not fully approved using CB in daily operations. In general, officers in the largely rural southern part of the state find the NEAR program more acceptable, while officers in the urbanized areas of northern Illinois tend to mistrust it. Finally, the program is resolving juristictional questions among CB-monitoring organizations to provide for smoother operations between them and emergency services agencies.

Illinois NEAR is serving as the prototype for other state NEAR programs. Experience with it will tend to determine the future course of the NEAR program. Progress to date suggests that the NEAR program will emerge as a major force in the effective use of CB in emergencies.

3. U.S. COAST GUARD

During the period when the FCC had initially authorized what is now known as the CB Radio Service, the U.S. Coast Guard began developing a marine radio system, which is frequency modulated and operates in the VHF band. It has, consequently, better performance characteristics than CB, and equipment for

it is somewhat more expensive than CB equipment. This service is a replacement for a 2-MHz, amplitude-modulated system, which was finally phased out of operation on January 1, 1977. In the course of developing the new system, the USCG installed a considerable amount of equipment, including remote base stations and repeaters to provide continuous coverage within 20 miles of land.[1]

The growth of the CB Radio Service, however, has led many boaters to install CB transceivers on their boats. The USCG first became concerned with this trend in 1961. The USCG decided it should not monitor CB channels because of their technical characteristics. In 1964, the USCG promulgated a policy of not permitting installation of CB equipment on board its vessel or in its on-shore facilities. The USCG policy also banned monitoring of CB channels.[2]

Use of CB transceivers by boaters, nevertheless, continued to increase. As a result, the USCG contracted, in 1968, for a study to (1) assess the effectiveness of CB in improving boating safety; and (2) determine the feasibility of direct USCG operations on CB, if the service proved effective in promoting boat safety.[3] The study recommended against installing CB transceivers in USCG vessels and land units, as well as against monitoring CB channels. The report recommended, however, that boaters arrange with the FCC for authorization to install and use VHF-FM transceivers in non-USCG on-shore installations (such as marinas and yacht clubs) at which interfaces could be established between CB and its marine radio system. The study also recommended developing techniques for homing on boats equipped only with CB transceivers. Finally, the report recommended using all available appropriations to expand the USCG marine radio system.

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[1] Ray Newhall, "CB Scene: CB for Pleasure Craft," Popular Electronics, Vol. 9, No. 5, May 1976, pp. 92-93.

[2] National Transportation Safety Board, Marine Casualty Report--Loss of Small Boats with Fatalities during Heavy Weather off the Northern California/Southern Oregon Coast, 16 August 1972, USCG/NTSB-MAR-74-77, August 28, 1974, pp. 10-11.

[3] Loc. Cit.

In early 1974, the USCG again reviewed its CB policy (and the 1968 study) and slightly revised its policy. The revised policy held that the USCG will continue to:[1]

- Prohibit direct participation in the CB Radio Service by installing CB equipment or monitoring CB channels
- Seek appropriations to extend and improve the USCG radio system
- Advocate strongly the use of the USCG radio system as the primary short-range communications system for boating safety

The USCG undertook a campaign to educate boaters about the advantages of the marine radio system over CB. The USCG also attempted to inform boaters and others about how to relay CB distress signals from boaters to the appropriate authorities.

Boating accidents occurred, however, in which boats were damaged and lost and, in some instances, boaters were injured, killed, and lost because the USCG could not communicate over CB channels. In particular, on August 16, 1972, 69 small boats operating off the coast of northern California and southern Oregon unexpectedly encountered high winds and rough seas. Although USCG and private vessels conducted rescue operations, 13 boaters were killed or lost, and damage in excess of $132,000 was incurred. In its investigation, the National Transportation Safety Board concluded, in part, that communications between the boats in distress and USCG vessels was inadequate because of the inability of the USCG to monitor requests from boaters for assistance transmitted on CB channels.[2]

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[1] Loc. Cit.

[2] Op. Cit., pp. 6-8

As of January 1977, the USCG continued to oppose direct involvement with CB.[1] Officially, the Coast Guard Auxiliary policy on CB followed the USCG policy. In practice, many Coast Guard Auxiliary vessels monitored CB channels and even used CB channels for their own administrative purposes. Special marine monitoring groups developed; Channel 13 was adopted in many locations as the boating emergency channel. Coastal REACT Teams and other Channel 9 monitoring groups handled traffic from boaters along with traffic from persons in vehicles.[2]

In mid-1977, however, Congressional pressure resulted in the USCG decision to install CB equipment in USCG facilities and to allow the monitoring of CB channels by USCG personnel.[3] As a result, the USCG has begun to install CB transceivers in approximately 200 Search and Rescue (SAR) stations throughout the United States.[4] No special antennas or remoting equipment will be used, and coverage will, therefore, be limited. Installations will be completed in time for the 1978 boating season.

Since the USCG does not presently plan to develop any type of voluntary monitoring program to support its SAR installations, the program is likely to have limited impact on overall emergency CB capabilities.

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1 USCG, Eleventh Coast Guard District, Southern California Marine Communications, pp. 18-19.

2 Ray Newhall, "CB Scene: CB for Pleasure Craft", Op. Cit.

3 Ed Johnson and Pete Bowles, "The Coast Guard Gears for CB Monitoring, but It Warns Boaters of Limitations," CB Magazine, Vol. 15, No. 5, May 1978, pp. 31 ff.

4 DOT, News: Coast Guard Participates in Citizen Band Radio Service, CG 92-77, September 22, 1977.

4. FEDERAL HIGHWAY ADMINISTRATION

The Federal Highway Administration is responsible for the federal-aid highway programs. Most FHWA funds are, therefore, committed to the construction and maintenance of federal interstate, primary, and secondary highways. The FHWA is also involved in research and development in a number of highway-related areas that depend on communications. These include:[1]

- Motorist Aid Systems--to bring motorists in disabled vehicles to the attention of authorities responsible for providing assistance
- Incident Management Systems--to detect and remove damaged and disabled vehicles and other traffic-flow impediments from highways
- Motorist Information Systems--to provide motorists with directions, weather and traffic conditions, locations of necessary facilities, and similar advisories
- Integrated Highway Communications Systems--to provide for the exchange of all information necessary to support both highway users and agencies responsible for traffic control, highway maintenance, and other management functions

Note that Travellers Information Systems, which are discussed in Chapter X, are one-way motorist information systems and are subject to FHWA research and development efforts.

The FHWA participates in these activities by:

- Conducting in-house research
- Funding research by industry, universities, and nonprofit organizations
- Awarding matching construction funds for experimentation with and implementation of communications projects on federal-aid highways

[1] I. J. Fullerton, et al., Motorist Aid Systems Study: State of the Art Report, FHWA, DOT-FH-11-8745, August 1976, pp. 9-22.

- Awarding matching Highway Planning and Research Program funds to states for research, development, and evaluation activities
- Cooperating with NHTSA in projects of mutual interest
- Providing technical advice to state and local governments

Much of FHWA communications-related research has been conducted into call-box systems installed along sections of the federal-aid highway system to provide motorist aid. There has been growing interest, however, in systems that are usable by persons in their vehicles. This interest stems, in part, from the greater flexibility afforded by such in-vehicle communications systems. FHWA also appears to have been influenced by the growing numbers of vehicles equipped with CB transceivers and the consequent decisions of at least several states to use the CB Radio Service instead of fixed call-box systems. As a result, there have been a number of studies of in-vehicle communications systems. These have included systems specifically designed to meet driver and agency needs, which are now considered impractical because of the high cost to both vehicle owner and operating agency.[1]

Recently there has been concern with using the CB Radio Service either without modification of existing equipment,[2] or with simple, low-cost modifications to available equipment.[3] This latter approach, interestingly, started with the development of a new 450-MHz transceiver, which proved to have too short a range to be effective and was abandoned.[4] As a substitute, the project then modified

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[1] J. J. Renner and A. D. Owen, A Motorist Radio Service, FHWA, FHWA-RD-76-16, January 1972.

[2] J. Bruggeman, et al., Review of Current and Proposed Low Cost Freeway Incident Management Systems, FHWA, FHWA-RD-76-111, May 1976.

[3] L. E. Koehler, et al., Motorist Aid Transceiver, FHWA, 3 v., FHWA-RD-76-122, -123, and -124, March 1976.

[4] Ibid, Vol. 1, pp. 1-2.

conventional CB transceivers to transmit digital requests for emergency assistance or for travelers' information. Transmissions of the digital signals are over Channel 9. Modification of CB transceivers was accomplished by adding external modules to existing units; it could also be accomplished by incorporation of required circuitry into new units. Digital requests are to be received by special remotely controlled base stations along major highways and processed by personnel in selected public safety facilities. CB transceivers modified for this use retain their normal voice-communications capabilities. FHWA has now contracted for a test installation of this system in the State of Georgia.[1]

If technological advances of importance to the CB Radio Service ultimately result from FHWA developmental activities, they will do so at least several years from now and perhaps only in the distant future. While DCPA should monitor (and, if appropriate, influence) the nature of these potential technological advances, FHWA programs are not likely to provide major technical breakthroughs in emergency communications (such as drastically improving the performance of CB transceivers). FHWA programs, furthermore, do not appear likely to result in the development of any significant number of organized, disciplined CB communicators available for use in emergencies.

5. LAW ENFORCEMENT ASSISTANCE ADMINISTRATION

The Law Enforcement Assistance Administration provides support in the development of law enforcement and criminal justice programs. LEAA conducts in-house research; contracts for research and evaluation studies with industry, universities, and nonprofit organizations; collects and disseminates information on programs of potential interest to organizations and persons involved in the law enforcement and criminal justice fields; and provides financial assistance

[1] Telephone conversation with Shirl J. Stephany, Director, Southwest Georgia Emergency Medical System, December 2, 1977.

to state and local government agencies, nonprofit organizations and other approved recipients to study, implement, and evaluate projects in these areas. Financial assistance is granted directly by LEAA or through state planning agencies established in all states to receive federal funds, and to disburse them in support of projects developed in compliance with state plans to improve law enforcement and the administration of criminal justice.

LEAA does not have a specific policy on the acquisition of CB radios. Such acquisitions can be authorized, however, if they are included in a project eligible for an LEAA or a state planning agency grant. Partly because of decentralization of the grant process, it has been difficult to assess the extent to which CB radios are used in LEAA-funded projects. It is evident, however, that at least a few projects have been approved in which CB radios are used to provide improved security in residential neighborhoods or within the confines of large residential complexes. The use of CB radios generally appears incidental to the overall project; they provide a readily available means of communication, which can be used by ordinary citizens or paid security guards to increase their contact with each other and occasionally with law enforcement agencies.

A study funded by an LEAA grant reviews and assesses about 800 neighborhood patrol projects, many of them employing CB radios.[1] Some of these patrol projects were funded by LEAA, but most of them were either unfunded, neighborhood-organized activities, or were funded outside of LEAA. This study is helpful in that it establishes some useful guidelines on the organization of patrols; these guidelines are generally applicable to other volunteer organizations, including CB equipped civil preparedness units.

In addition, a few projects may also have been approved for installation of CB transceivers in police vehicles or dispatch centers. These projects use CB to

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[1] R. K. Yin, et al., Patrolling the Neighborhood Beat: Residents and Residential Security, The Rand Corporation, 3 v., R-1912-DOJ, R-1912/1-DOJ, and R-1912/2-DOJ, March 1976.

communicate with members of the public or to monitor CB channels for indications of illegal activities. The extent and nature of such projects is unknown, since a detailed study of LEAA records was not conducted.

It is clear that use of CB plays a small role in overall LEAA-funded activities. While community crime prevention programs using CB equipment and volunteers may continue to be funded by LEAA, the present administration is opposed to the continued acquisition of hardware for law enforcement agencies, which staff members are interpreting as including CB equipment.[1] LEAA is not likely, therefore, to deploy a significant amount of CB equipment or to develop a corps of trained, disciplined volunteers capable of using CB to support emergency operations. In particular locations, however, LEAA-sponsored projects may provide useful CB equipment and personnel. Local civil preparedness agencies should, consequently, be aware of such projects and may be able to incorporate CB equipment and personnel from them into emergency communications plans.

6. NATIONAL WEATHER SERVICE

The National Weather Service, which is a component of the National Oceanic and Atmospheric Administration (NOAA), U.S. Department of Commerce, began the SKYWARN program in January 1969. It was intended to strengthen recruitment of volunteer tornado and severe storm spotters, improve the morale of these spotters, and increase public awareness of tornado and severe storm hazards.[2] While SKYWARN primarily provides a tornado and severe storm spotting capability, a number of spotting networks exist around the country to assist local NWS offices in other hazardous situations. For example, networks monitor for both stream and flash flood hazards, collect information on winter storms, and

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[1] Griffin Bell, Excerpts from Question and Answer Session before the National Press Club, January 11, 1978, [U.S. Department of Justice], n.d.; LEAA Guideline Manual: Guide for Discretionary Grant Program, M4500.1F, December 21, 1977, pp. 1-11.

[2] NOAA, Tornado Preparedness Planning, U.S. Government Printing Office, October 1973, p. 14.

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THE ROLE OF THE CITIZENS BAND RADIO SERVICE AND TRAVELERS INFOR--ETC(U)

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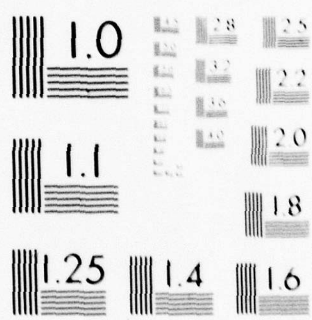

MICROCOPY RESOLUTION TEST CHART
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monitor locally high wind conditions. Some networks are used to disseminate warnings to particular groups such as boaters and truckers.[1]

SKYWARN is a loosely structured program. It includes at least 500 spotter networks.[2] NWS Headquarters, however, does not maintain records of the locations in which networks operate, the types of activities they perform, or their organization and size. This information is available, however, at the various Weather Service Forecast Offices and Weather Service Offices that operate networks; and some of it is available at NWS Region Offices.

Constitution of SKYWARN networks is a discretionary function of NWS offices. In some NWS facilities, staff personnel take an active role in establishing and maintaining SKYWARN networks. In some cases, a local civil preparedness agency, police or fire department, or other emergency services agency has cooperated with an NWS office to establish a SKYWARN network. In 1973, DCPA and NOAA signed an agreement to coordinate the community natural disaster program. The agreement designates the DCPA On-Site Assistance program as the means to carry out much of the disaster planning occurring at the local level.[3] This agreement may actually stimulate the development of new SKYWARN networks. In many cases, however, NWS offices (as well as the staffs of the DCPA On-Site Assistance program and of local government agencies) are overcommited and tend to respond to offers of assistance from outside rather than actively recruiting for the SKYWARN program.

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[1] NWS, Amateur Radio and the National Weather Service: A Model Plan and Background Information for Using the Amateur Radio Service as a Select Storm Spotter and Reporting System, June 1977, pp. 11-19; P. Williams, Chief, Meteorological Services Division, NWS Western Region, Salt Lake City, Utah, Memorandum to NWS Headquarters (Attn: Wx5), subject: REACT Followup, September 20, 1976.

[2] NOAA, Op. Cit., p. 8; meeting with Arlin Snider and Herbert Groper, Disaster Preparedness Staff, NWS, July 19, 1977.

[3] NOAA, Op. Cit., p. iii.

There are no uniform standards for SKYWARN networks. Each network is organized around the needs of the area it serves. Ideally, trained spotters are stationed at points about two miles apart within a radius of about 20 miles around a population center.[1] Teams may be drawn from emergency services organizations (such as police, fire, and state police/state patrol agencies) or from businesses (such as power companies). Alternately teams may consist of volunteers.

Some teams communicate by two-way radio, but others report by telephone. In some networks, members report directly to the local NWS facility. In others, they report to their own network control point. In yet other networks, members report to a local emergency services agency control point (such as a police or fire department dispatcher or to the civil preparedness EOC). These intermediate control points warn the public, if appropriate, and relay the spotter reports to the NWS facility.

Because of the desirability of using two-way radio Communications to coordinate SKYWARN operations and to receive reports from spotters, many SKYWARN networks have been recruited from the ranks of CB and amateur radio organizations. Generally such involvement originates locally, but in 1974, REACT surveyed its teams for NWS in an effort to recruit them into the SKYWARN program. The REACT effort added a number of teams to NWS resources.[2]

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[1] NOAA, Op. Cit., p. 8.

[2] For example a total of 93 SKYWARN networks were recruited from REACT in the NWS Southern Region; 50, in the Eastern Region; and six in the Western Region. The number of SKYWARN teams is probably conditioned by the expected number of tornadoes and severe storms. J. A. Riley, Chief, Meteorological Services Division, NWS Southern Region, Memorandum to Chief, Disaster Preparedness Staff (Wx5), NWS Headquarters, subject: REACT Followup, October 12, 1976; W. J. McKee, Executive Officer (WFEx2), NWS Eastern Region, Memorandum to H. S. Lieb, Chief, Disaster Preparedness Staff (Wx5), NWS Headquarters, subject: Survey of "REACT" Agreements, September 15, 1976; P. Williams, Op. Cit.

In general, SKYWARN networks are activated upon dissemination of a tornado or severe storm watch, which indicates that a defined area may be subject to such a storm during a stated period of time. The members of the network take their positions and report the onset of the storm, if it occurs. Because the actual impact of tornadoes and severe storms is hard to predict and cannot always be observed by weather radar, trained and organized spotters are of considerable value to both the NWS and local emergency services agencies.

Spotter reports may initiate a tornado or severe storm warning, which indicates that an actual storm is occurring and signals members of the public to take protective actions. Alternatively, the warning may be initiated by other means, and the spotter may provide additional information on storm location, direction and speed of travel, damage caused, and emergency assistance needed.

SKYWARN network members generally, but not always, receive some training in identifying and reporting tornadoes and severe storms. Training is often brief; it may be repeated on a seasonal basis to refresh the skills of network members. Training is designed to reduce false reports, which can result when inexperienced spotters observe noncritical meteorological conditions resembling dangerous storms. Some networks conduct practice exercises to further increase spotters' skills. Many NWS facilities acknowledge spotter participation with personal letters of thanks. Outstanding or heroic performance is often commended in the media and through award ceremonies.

In general, the loose structure of the SKYWARN program (as well as the inconsistent use of CB communications) militate against its being used to develop emergency CB capabilities. The recent involvement of DCPA in planning for local natural disaster responses may, however, change this situation. Consideration should be given to imposing tighter standards on the SKYWARN program and participants in order to develop more persons (including CBers) trained in effective emergency operations and disciplined emergency communications.

The NHTSA National Emergency Action Radio program, described in Section 2 of this chapter, merits closer examination by DCPA for its possible contributions to civil preparedness operations. To a lesser degree the NWS SKYWARN program (in cooperation with the DCPA On-Site Assistance program), described in Section 6, also merits attention. The other programs reviewed in this chapter need only be monitored to determine whether any significant changes are occurring in them. Proposed DCPA actions on the NEAR and SKYWARN programs are presented in Chapter IX.

CHAPTER V

USE OF THE CITIZENS BAND RADIO SERVICE BY STATE AND LOCAL CIVIL PREPAREDNESS AGENCIES

State and local civil preparedness agencies display markedly different attitudes toward and make significantly different uses of the CB Radio Service in emergency operations. Those state civil preparedness agencies that use CB do so in a very limited fashion and are generally dubious of its capabilities. The local civil preparedness agencies that use CB apparently do so under fewer constraints than their state counterparts and with much greater confidence in the capabilities of the service to meet legitimate civil preparedness needs.

1. METHODOLOGY

To assess the uses made of CB by state civil preparedness agencies, a questionnaire was prepared and submitted to all 50 agencies. (The questionnaire appears in Appendix G, pages G-3 through G-14.) Full responses were received from 45 agencies; a letter response, from an additional agency. In addition, telephone interviews were conducted with communications and warning officers in 12 state civil preparedness agencies, and personal visits were made to the California Office of Emergency Services and the Colorado Disaster Emergency Services Agency. The telephone interviews provided substantially complete responses from two additional states, bringing the total usable responses to 48. In addition, newspaper and magazine articles especially on recent disasters, were collected and reviewed; they provided general background information, but did not contribute any specific content to the analysis of state civil preparedness agency uses of CB.

Each questionnaire sent to a state civil preparedness agency asked the respondent to supply the names and addresses of four contact persons in local civil preparedness agencies with effective programs to use CB in emergencies. The four agencies were ideally to include:

- Largest Jurisdiction--the jurisdiction with the largest population that had an effective CB program

- State Capitol--the jurisdiction containing the state capital, if it an effective CB program; or, if the state capital lacked a CB program, another jurisdiction with a middle-size population

- Middle-Sized Jurisdiction--another jurisdiction with a middle-sized population

- Small Jurisdiction--a jurisdiction with a small-sized population

Precise population limits were left to the discretion of the respondents. If a respondent could not supply contacts in the four categories of jurisdictions requested, moreover, the questionnaire encouraged him to substitute jurisdictions as he saw fit. Respondents for 12 state civil preparedness agencies did not identify any jurisdictions with effective CB programs; respondents for an additional nine agencies, identified only one or two such jurisdictions; and respondents for 27 agencies identified three or four jurisdictions with effective CB programs.

To assess the uses of CB by local civil preparedness agencies, another questionnaire was prepared, specifically tailored to local emergency operations. (This questionnaire appears in Appendix G, pages G-15 through G-28.) The questionnaire was mailed to a total of 120 local civil preparedness agencies in 36 states. A total of 91 questionnaire responses were received from these agencies for a response rate of 76 percent. (One of the responses indicated that the agency did not use or plan to use CB, and the response was dropped from further analyses.) Responses are from local civil preparedness agencies and from local public safety agencies. The latter either served as civil preparedness agencies or provided communications support to local civil preparedness agencies. References to local civil preparedness agencies throughout Section 3 of this chapter should be understood to include both civil preparedness agencies and allied public safety agencies. In-person visits were made to the Colorado Springs-El Paso County Civil Preparedness Agency and to the Fremont County Civil Preparedness Agency, and telephone interviews were conducted with eight persons who also received questionnaires. Current

newspaper and magazine articles on local-level civil preparedness activities were collected and reviewed; as with state-level information, these articles provided background information, generally on recent disaster experiences, but did not contribute any specific content to the analyses of local civil preparedness agencies' uses of CB.

It is necessary to emphasize that the sample of local jurisdictions assembled must be regarded as highly purposive. It consists of 90 agencies selected because they are making effective use of CB; they are highly likely to be biased in favor of CB. Because of the failure of some state civil preparedness agencies to provide local-level contacts, the sample is geographically incomplete. The results of the analysis of local civil preparedness agency questionnaire responses must, therefore, be regarded as descriptive of CB activities in the 90 jurisdictions covered. It is not feasible to extrapolate from those 90 jurisdictions to other jurisdictions.

2. STATE CIVIL PREPAREDNESS AGENCIES

Use of the CB Radio Service by state civil preparedness agencies is limited. Table 5-1 summarizes use information supplied by respondents for 48 state

Table 5-1. Use of CB by State Civil Preparedness Agencies

Civil Preparedness Agency Responses	Number of Agencies Responding	Percentage
Currently Using CB	15	31
Currently Using CB and Planning to Upgrade Equipment	9	19
Planning to Use CB in the Future	2	4
Neither Using nor Planning to Use CB	22	46

n = 48

civil preparedness agencies. Of these 48 agencies, 24 own some CB equipment;

nine of them plan to add equipment, replace old equipment, or a combination of both. Two additional agencies plan to add CB equipment in the future.

2.1 ATTITUDES TOWARD THE CB RADIO SERVICE

Attitudes expressed in questionnaire responses vary widely as to the effectiveness of CB for use in civil preparedness emergencies. These attitudes are summarized in Table 5-2. Note that the findings in table 5-2 involve extensive interpretation of questionnaire responses. For example, some respondents indicated that tighter control of CB use was not necessary because they had not experienced problems with CB, while others indicated that it was not necessary because CB could not be controlled. Statements about the nature of the controls necessary ranged from suggestions for supportive programs designed

Table 5-2. State Civil Preparedness Agency Attitudes Toward Control of the CB Radio Service

Agency Response	All Agencies n = 48		Agencies Using CB n = 26	
	Number	Percentage	Number	Percentage
Do Not Need Stronger Control	4	8	4	15
Stronger Control Required	21	44	11	42
Stronger Control Required, Especially to Assure Channel Availability in Emergencies	14	29	9	35
Cannot be Controlled	8	17	2	8
No Opinion	1	2	-	-

to encourage good performance to negative statements predicting high probabilities of failure. Based upon this variability, it was necessary to read the responses closely and to interpret their intent. Some individual respondents may take issue with the interpretations assigned; overall, however, the findings reported are undoubtedly more representative than a simple tabulation would have produced.

Of the 48 state civil preparedness agencies for which information is available, respondents for only four indicated that stronger control of the CB Radio Service was not necessary. These four agencies all currently use CB equipment. Respondents for two of the agencies reported that they had experienced no serious problems with CB (New Hampshire Civil Defense Agency and Wyoming Disaster and Civil Defense Agency); respondents for the other two agencies reported that CBers can regulate themselves (Arizona Division of Emergency Services and Montana Civil Defense Division).

Respondents for a total of 35 agencies (or 73 percent of respondents) indicated the need for tighter control of the CB Radio Service. Of these, 14 respondents commented directly or indirectly about problems involved in clearing channels in emergencies, suggested the creation of more emergency channels, or otherwise indicated problems with passing emergency traffic. Of the 26 agencies using CB, respondents for 20 (or 77 percent of CB-using agencies) indicated the need for tighter control of the CB Radio Service, of which nine specifically commented about emergency traffic handling problems.

Finally, respondents for eight of the 48 state civil preparedness agencies indicated that CB radio could not be controlled and, therefore, was not suitable for use in emergency operations at least at the state level. Only two of the respondents from state civil preparedness agencies currently equipped with CB transceivers were of the opinion that CB radio was not suitable for state-level emergency use. The negative opinions of some respondents almost certainly result from hearsay rather than from actual experience.

2.2 REASONS FOR NOT USING CB EQUIPMENT

Respondents for the 22 state civil preparedness agencies not using CB equipment gave a variety of reasons for their agencies' policies. Their reasons are summarized in Table 5-3. In general, the absence of a state requirement can be interpreted to mean that the agency does not need the short-range communi-

Table 5-3. Reasons Given by State Civil Preparedness Agencies for Not Using CB Equipment

Response	Number of Agencies Responding	Percentage
No State Requirement	10	45
No State Requirement Plus Technical or Operational Problems	4	18
Technical or Operational Problems Only	6	27
No Reason Stated	2	9

n = 22

cations capability offered by the CB Radio Service. The technical problems referred to are most frequently caused by skywave propagation; the operational problems, by channel congestion and failure of CBers to adhere to good communications procedures.

Many of the questionnaire responses indicated that CB capabilities could be mobilized from county civil preparedness agencies when they were needed. There was little sense, nevertheless, of state management of CB capabilities, or even of state-maintained records of these capabilities. Specifically, the questionnaire asked about CB capabilities in four subordinate jurisdictions. The response has been described in Section 1, but is summarized here for the reader's convenience:

- No local jurisdiction identified - 12 agencies
- 1 or 2 local jurisdictions identified - 9 agencies
- 3 or 4 local jurisdictions identified - 27 agencies

Respondents from one jurisdiction in each of the first two categories indicated that, in their opinion, there were no suitable additional jurisdictions. It is possible, however, that the spotty response from a number of states is partially conditioned by an absence of any DCPA-sponsored CB programs. It is certainly conditioned by scepticism about the utility of the CB Radio Service.

2.3 USES OF CB COMMUNICATIONS REPORTED BY STATE CIVIL PREPAREDNESS AGENCIES

Of the 26 state civil preparedness agencies using CB equipment, 19 (or 73 percent) have no plans for CB communications, four (or 15 percent) have such plans, and one has a plan under development. (Two respondents did not indicate whether their agencies have such plans.) The four reported plans were developed by:

- Colorado Disaster Emergency Services Agency (developed in 1968 and reported with the comment that it may have to be revised)
- Louisiana Department of Civil Defense and Emergency Preparedness
- Nevada Civil Defense and Disaster Agency (a state emergency communications plan, which includes provisions for CB communications)
- Utah State Emergency Services Agency

The Vermont Civil Defense Division is currently developing a plan for its substate districts, using the short range of CB in regional applications.

The purposes to which the respondents from various state civil preparedness agencies anticipated putting their agency's CB equipment are summarized in Table 5-4. Of the 26 states included in the tabulation, 16 (or about 62 percent) planned to use CB for coordinating with volunteers providing emergency support; 14 (or about 54 percent) anticipated using CB to communicate with the public; 12 (or about 46 percent) indicated their agencies will use CB to communicate within their own organizations, or with other government agencies;

Table 5-4. Purposes for Which State Civil Preparedness Agencies Own CB Equipment

Civil Preparedness Agency	Volunteer Support	Talking to Public	Agency Communications	Other Applications
Alaska		X	X	Telephone Substitute
Arizona			X	Shelter Communications
California	X		X	
Colorado	X			
Illinois		Unk.		
Kentucky	X			
Louisiana		X	X	Rural Warning
Maine	X	X		
Michigan	X	X		Citizens Crime Patrol
Missouri	X	X		
Minnesota	X	X		
Montana	X			
Nevada	X	X	X	Search and Rescue
New Hampshire			X	
New Mexico	X		X	
North Dakota				Antenna Repair
Ohio		Unk.		
Oregon	X	X		
Pennsylvania	X			
Rhode Island	X	X		
South Carolina		X	X	
Utah	X	X	X	Courier Service Makeshift EMS Vehicles
Vermont	X	X	X	
Washington	X	X		
Wisconsin		X	X	
Wyoming			X	
Number of Agencies Responding	16	14	12	7

n = 26

EMS - Emergency Medical Service

and seven (or about 15 percent) planned to use CB for alternative or supplementary functions. While the respondents frequently described such intra- and interagency communications over CB channels as occurring only if other means of communication were not available, the number of states anticipating this use of CB was surprisingly high, considering the concerns expressed about the lack of discipline among CBers.

Some of the miscellaneous applications shown in Table 5-4 are also interesting. The respondent for the North Dakota Disaster Emergency Services Agency used CB only to coordinate antenna repairs between the state EOC and remote communications facilities--hardly a vital use. The Alaska Disaster Office reported using CB frequently as a substitute for the telephone. The Louisiana Department of Civil Defense and Emergency Preparedness planned to send CB-equipped volunteers door-to-door in rural areas to disseminate warnings. The Utah State Emergency Services Agency reported using CB-equipped volunteers to carry messages--generally health and welfare traffic--between central communications points and the persons to whom they were addressed.

Actual uses of CB reported by respondents for state civil preparedness agencies are limited. Asked for examples of recent large-scale emergency operations involving CB, respondents from only two state civil preparedness agencies supplied information. The Maine Bureau of Civil Emergency Preparedness cited monitoring ice in the Kennebec River Valley and problems that resulted from ice buildup. The Utah State Emergency Services Agency cited using CB-equipped couriers to assist in handling health and welfare traffic received from Idaho after the Teton Dam failure in 1976. Since the situation involved handling communications in a state adjacent to Idaho, the use of CB cited did not actually occur in a true emergency operation. In contrast, the respondent for the Idaho Bureau of Disaster Services, which does not own CB equipment, cited the Teton Dam collapse as an example of CBers reporting grossly inaccurate information, drawing assistance away from where it was needed, and generally operating out of control. Perhaps the strongest example of CB use in an emergency was provided by the respondent for the

Mississippi Civil Defense Council, which also lacks its own CB equipment; in the instance cited, the Mississippi Highway Safety Patrol provided CB equipment, which was used to coordinate between the state EOC and emergency shelters occupied by people displaced by flooding.

Table 5-5 summarizes the various uses respondents for the CB-equipped state civil preparedness agencies claim their organizations have made of their equipment. Most state respondents reported only a single type of use; three state respondents, two different types of uses; and one state respondent, three different types of use. Three state respondents reported limited or nonemergency uses. The largest single group of respondents (representing 10 states) reported that their agencies had not made any use of their CB equipment.

The amount of equipment owned or planned for ownership by the various state civil preparedness agencies is shown in Table 5-6. In general, very modest amounts of CB equipment are involved. Of the 24 agencies now owning equipment, seven own a single transceiver, eight own two or three transceivers; and three own five or six transceivers. Only five civil preparedness agencies are equipped with eight or more transceivers. In the future, 10 state civil preparedness agencies plan to purchase CB equipment, including two agencies not currently equipped to operate in the CB Radio Service. Five of these planned acquisitions do not have dates, and one lacks the number of pieces of equipment to be acquired, indicating that these agencies probably have not finalized their CB budgets and may not actually acquire additional equipment. The Utah State Emergency Services Agency, already one of the better equipped agencies, is, in contrast, budgeted to add 36 new transceivers to its inventory in late 1977 or early 1978. No state civil preparedness agency used General Mobile Radio Service (GMRS) equipment, and only six agencies used single sideband (SSB) equipment (with one state planning to add SBB equipment in the future).

Table 5-6 also indicates how state civil preparedness agencies deploy their CB equipment. Of the 24 agencies currently owning equipment, 10 have CB

Table 5-5. Types of CB Uses Reported by State Civil Preparedness Agencies

Activity	Number of Agencies Reporting	Percentage
Natural Disaster Operations Only	4	15
Severe Weather Spotting Only	1	4
Search and Rescue Only	1	4
Motorist Assistance Only	1	4
Natural Disaster Operations, Severe Weather Spotting, and Search and Rescue	1	4
Natural Disaster Operations and Severe Weather Spotting	2	8
Severe Weather Spotting and Motorist Assistance	1	4
Miscellaneous (Paging Agency Employees, and Supporting Public Functions)	3	12
Unknown	2	8
Not Used	10	38

n = 26
*Does not add to 100 percent because of rounding

equipment both in their Emergency Operation Centers (EOC) and in mobile units; four have CB equipment only in their EOCs; three have deployed CB equipment in state area EOCs or other area facilities (and have mobile units as well);

Table 5-6. CB Equipment in Use or Planned for Use by State Civil Preparedness Agencies

State	Current CB Equipment: Base	Current CB Equipment: Mobile	Current CB Equipment: Pers. Port.	Planned CB Equipment: Base	Planned CB Equipment: Mobile	Planned CB Equipment: Pers. Port.	Year	Use SSB?
Alaska		1 MCC 2 Cars						Yes
Arizona	1 EOC 1 MCC							Yes
California	2 MCC		4 MCC*					Yes
Colorado	1 EOC				1 MCC		Unk	No
Illinois		1 MCC						Unk
Kentucky	1 Area Coord. Office	3 Cars	2 Unk	2 Unk	19 Cars	2 Unk	Fy1979	No
Louisiana				1 EOC			Fy1978	No
Maine	1 EOC			2 Unk	2 Unk		Unk	Yes
Michigan**	57 MSP Posts	100 Cars						No
Missouri	1 EOC	2 Cars			3 Unk		Unk	No
Minnesota		1 MCC		1 EOC			1977	
Montana				Unk	Unk	Unk	Unk	Unk
Nevada	1 EOC	1 MCC 4 Cars	4 Unk					Unk
New Hampshire	1 EOC				3 Unk		Unk	No
New Mexico	1 EOC							No
North Dakota	1 EOC	1 EOC (Stock)						No
Ohio	1 EOC (Not used)	4 EOC (Stock)						Unk
Oregon	1 EOC	1 Unk		Unk	Unk	Unk	1979	Future
Pennsylvania	4 Area EOCs	12 Unk	12 EOC (Stock)					No
Rhode Island		1 MCC	2 Unk					No
South Carolina	1 EOC	3 MCC	4 EOC (Stock)					No
Utah	1 EOC 5 Unk	6 Cars; S&R	2 Cars; S&R	15 Unk	15 Unk	6 Unk	(1977-1978)	Yes
Vermont	1 EOC	1 Car						No
Washington		2 MCC						No
Wisconsin		1 Unk						No
Wyoming	1 EOC (Rcvr)		2 EOC (Stock)	1 EOC	2 Unk		Unk	Yes

Key: EOC - Emergency
MSP - Michigan State Police
S&R - Search and Rescue
MCC - Mobile Command/Communications Center
Rcvr - Receiver only
Unk - Unknown
(Stock) - In stock location indicated

Each entry indicates the number of units and their location.

*2 units deployed in each of two MCCs
**Equipment is owned by MSP

and seven have only mobile CB equipment. Included among the mobile units are mobile command/communications centers (MCC); seven state civil preparedness agencies have installed CB radios in MCCs, for communication with local CBers at the scene of an emergency. Another approach used to provide CB capabilities is stockpiling either mobile units or personal portables for assignment as needed--an approach used by five states. Future additions of equipment, if actually procured, will add EOC capabilities in two states (one of which has no CB capabilities, the other of which has only an MCC). Proposed additions will also add at least some mobile CB capabilities in three states, which now have only base station transceivers in their EOCs.

2.4 STATE CIVIL PREPAREDNESS AGENCY INVOLVEMENT WITH CB ORGANIZATIONS

State civil preparedness agencies make disappointing little use of volunteer CB groups (such as state REACT councils and REACT teams). Table 5-7 summarizes

Table 5-7. Availability of Volunteer CB Support to State Civil Preparedness Agencies

Status of Volunteer CB Support	Number of Agencies Reporting	Percentage	Types of Agreements Formal	Informal	Unknown
Have Agreements	7	29	1	5	1
Developing Agreements	3	13	1	0	2
Do Not Have and Are Not Developing Agreements	16	67	0	0	0

n = 26

the experience of the 26 state civil preparedness agencies now equipped with CB transceivers or planning to install them. Of these, 16 do not have working relationships (even informal ones) with volunteer CB groups. Respondents for

three other agencies reported their organizations were developing such relationships. The Vermont Civil Defense Division was negotiating formal agreements between its district-level organization and three CB organizations; the Arizona Division of Emergency Services and the Nevada Civil Defense and Disaster Agency were each developing an agreement with one CB organization. The Minnesota Division of Emergency Services currently had formal agreements with two volunteer CB organizations. Among the informal agreements, the Maryland Civil Defense and Disaster Preparedness Agency (in concert with the Maryland State Police) had agreements with over 100 CB groups; the Colorado Disaster Emergency Services Agency had agreements with 15 CB organizations; the Pennsylvania Council of Civil Defense had a single informal agreement with the Pennsylvania Emergency Communications Council, which is a consortium of all volunteer communications organizations in the state. The South Carolina Disaster Preparedness Agency and Utah State Emergency Services Agency each had informal agreements with two CB organizations. Finally, the Wisconsin Division of Emergency Government had an unknown number of affiliations with volunteer support groups. A cursory check indicates that, in virtually all cases, some additional volunteer CB groups (in some cases, many such groups) were available, but were not incorporated either formally or informally into state civil preparedness agency plans.

2.5 ATTITUDES OF STATE CIVIL PREPAREDNESS AGENCIES TOWARD ALTERNATIVE CB PROPOSALS

A series of questions about organizing CBers for participation in emergency operations brought generally negative replies from respondents for state civil preparedness agencies. A proposal to create a CB capability similar to the Radio Amateur Civil Emergency Service (RACES) brought the strongly negative response shown in Table 5-8. Reasons for opposing such an organization varied: 10 civil preparedness agencies thought CBers lacked discipline; five agencies felt RACES was not successful and, therefore, not a good model; three agencies maintained that RACES is a national entity and that CB should be handled

Table 5-8. Responses of State Civil Preparedness Agencies to CB-Related Proposals

	Agree			Disagree			No Opinion		
	CB Users	Non-users	Total	CB Users	Non-users	Total	CB Users	Non-users	Total
Need to Create New Service	10	5	15	14	15	29	2	2	4
Need to Develop Support Organizations	5	4	9	15	16	35	2	2	4
Need for DCPA to Provide Technical Support	14	12	26	10	8	18	2	2	4

n = 48

solely at the local level; two agencies maintained that CB lacked adequate technical characteristics for a RACES-type organization; and one agency felt that CBers had to regulate themselves. (Eight agencies offered opinions that could not be classified or did not offer any opinions.) A suggestion to create support organizations, which would not be operational, but which would develop guidance materials on emergency uses of CB, establish communications among CBers and CB-using agencies, and perform other similar functions met with even less favorable responses as shown in the table. Only a proposal for DCPA to provide guidance and technical support to civil preparedness agencies using CB met with approval as shown in Table 5-8.

It is evident that any DCPA program to use the CB Radio Service and CB volunteers in civil preparedness emergencies must reckon with the currently unfavorable attitudes of a number of state civil preparedness agencies. Such a program must neutralize these unfavorable attitudes. The uses of CB and CBers by the National Highway Traffic Safety Agency in its National Emergency Action Radio (NEAR) program (see Chapter IV, Section 2); by local civil preparedness agencies (see Section 3, below); and by state police and state highway patrol agencies (see Chapter VI) should all be used to overcome any continuing hostility from state civil preparedness agencies to such a DCPA program. While the importance of these state civil preparedness agency attitudes toward using the CB Radio Service and CB volunteers cannot be disregarded, it should not be allowed to dissuade DCPA from developing and maintaining a CB program.

3. LOCAL CIVIL PREPAREDNESS AGENCIES

In contrast to state civil preparedness agencies, the local civil preparedness agencies sampled make active use of the CB Radio Service. Table 5-9 summarizes

Table 5-9. Use of CB by Selected Local Civil Preparedness Agencies

Agency Responses	Number of Agencies Responding	Percentage
Currently Using CB	66	73
Currently Using CB and Planning to Upgrade	17	19
Planning to Use CB in the Future	7	8
Neither Using nor Planning to Use CB	1	1

n = 91

use-status information supplied by respondents for 91 local civil preparedness agencies. Figure 5-1 shows the locations of the 91 agencies. Of these 91 agencies 83 (over 91 percent) currently own and use CB equipment. Among the 83 agencies, 17 plan to upgrade their CB equipment. In addition, seven other agencies are planning to become actively involved in CB; interestingly several of them already appear to be involved through volunteer CB groups or local public safety agencies. Of the 91 agencies for which information is available, only one respondent indicated that his agency does not currently use or plan to use CB.

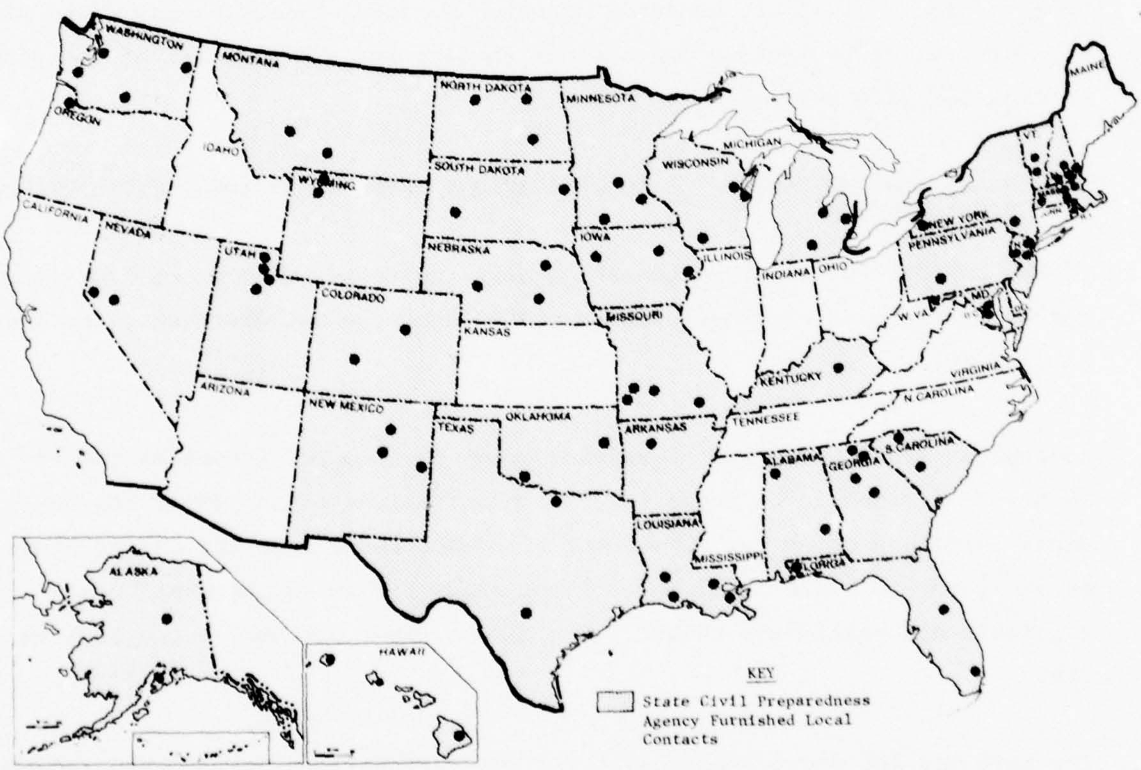

Figure 5-1. Locations of local Civil Preparedness Agencies Surveyed

3.1 LOCAL CIVIL PREPAREDNESS AGENCY ATTITUDES TOWARD CB RADIO

Attitudes expressed toward the CB Radio Service by local civil preparedness agency respondents indicated strong support for CB as a component of civil preparedness operations. Only three (or about 3 percent of the respondents), however, did not believe stronger control of the CB Radio Service was necessary. Of the three, one felt that stronger control was impossible; the other two had not experienced problems with CB. Of those respondents urging stronger control, 29 (or about 32 percent of all respondents) commented directly or indirectly on the need to protect communication channels in an emergency. Despite the expression of preference for strengthening control over the CB Radio Service, however, local civil preparedness agencies appeared basically satisfied with the service. (See Section 3.8 of this chapter for a discussion of the problems encountered with CB.)

3.2 PLANS FOR AND USES OF CB COMMUNICATIONS REPORTED BY LOCAL CIVIL PREPAREDNESS AGENCIES

Of the 90 local civil preparedness agencies surveyed, 21 did not have plans for using their CB equipment and personnel and were not drafting plans (see Table 5-10).

Respondents for the largest remaining group of agencies (representing 19 agencies) claimed to be preparing CB communications plans, while respondents for 46 agencies (or 51 percent of respondents) reported having plans. As indicated in Table 5-10, most of the plans for which information was available are relatively recent. The oldest plan, however, dated back to 1965.

The purposes for which respondents for the various local civil preparedness agencies expected to use their CB equipment are summarized in Table 5-11. Of the agencies tabulated, 74 (or 82 percent of all respondents) planned to use CB in coordinating with volunteers providing emergency support; 58 (or

Table 5-10. Status of Local Civil Preparedness Agency Plans for Using CB Radio

Status	Number of Agencies Reporting		Percentage*	
Plan in Force or Being Drafted	65		72	
In Preparation		19		21
1977		12		13
1976		11		12
1975		3		3
1974		2		2
1973		1		1
1972 or Earlier		1		1
No Date Given		16		18
No Plan in Force or Being Drafted	21		23	
Unknown	4		4	

n = 90

*Does not add to 100 percent or to subtotal because of rounding

about 64 percent of all respondents), in communicating with the public; and 49 (or about 54 of all respondents), in communicating with personnel from their own agencies or from other agencies. In addition, four local civil preparedness agencies (or about 4 percent of all respondents) either did not identify a purpose or identified other purposes. Of these, the response for the Denver, Colorado, Office of Emergency Services (DOES), is particularly interesting. DOES planned to use CB only to coordinate with associations and business organizations with which it had negotiated emergency agreements; these included truckers, heavy equipment operators, physicians and surgeons, wholesale pharmacists, and morticians.

Table 5-11. Purposes for Which Local Civil Preparedness Agencies Own CB Equipment

Purposes for Using CB	Combinations of Purposes.						Number of Agencies Reporting
Volunteer Support	x	x	x		x		74
Talking to the Public	x	x		x			58
Agency Communications		x	x	x		x	40
Number of Agencies Reporting	29	25	12	4	8	8	86

n = 86

Actual uses of CB by the local civil preparedness agencies surveyed were fairly extensive. Respondents for only 17 agencies (or 19 percent of all respondents) reported not making any operational use of CB, and the 17 agencies included those preparing actively to use CB equipment in their operations. Respondents for an additional four agencies reported using the CB only to support public functions such as parades and fairs. Table 5-12 records only actual uses claimed by agency respondents. The most consistent uses were in conducting weather watches and in supporting search and rescue operations; 57 respondents (or 63 percent of all respondents) reported using CB in each of these functions. Respondents also reported making extensive use of CB in conducting natural disaster operations and in supporting public functions; respondents from 49 agencies (or about 54 percent of all respondents) indicated these two uses of CB.

Of the 90 agencies surveyed, respondents for 65 reported their agencies had used CB equipment for two or more applications as follows (percentages refer to all 90 responding agencies):

- Five applications - 21 agencies (or 23 percent)
- Four applications - 12 agencies (or 13 percent)
- Three applications - 24 agencies (or 27 percent)
- Two applications - 8 agencies (or 9 percent)
- One application - 12 agencies (or 13 percent)

Table 5-12. Uses of CB Reported by Local Civil Preparedness Agencies

Uses of CB	Combinations of Uses*										Number of Agencies Reporting
Weather Watches	x	x	x		x	x	x	x			57
Search and Rescue	x	x		x	x		x	x	x		57
Natural Disaster Operations	x	x	x			x	x				49
Public Functions	x	x			x	x			x	x	49
Industrial Accident Operations	x		x								29
Number of Agencies Reporting	21	12	8	8	4	4	4	4	4	4	73

n = 73

* 17 agencies have had no field experience with CB

Asked for examples of CB uses in major emergencies, respondents from 54 local civil preparedness agencies supplied the requested information (see Table 5-13). In fact, respondents for each of 13 agencies reported two separate uses of CB radio in major emergencies. Several supplied obviously trivial examples, primarily involving automobile accidents, which have been lumped together, and the actual severity of those remaining cannot be assessed. The most recent uses included:

- Search and rescue missions - 12
- Flash and river floods - 8
- Blizzards - 6
- Tornadoes - 4
- Hurricanes - 4
- Seismic sea waves, high surf - 4
- Industrial accidents - 4
- Fire and fire detection - 4

Table 5-13. Examples of Emergency Uses of CB by Local Civil Preparedness Agencies

Emergency Experienced	Date of Reported Emergency	Number of Agencies Reporting		Percentage*	
Major		46		51	
	1977		17		19
	1976		16		18
	1975		2		2
	1974		1		1
	1973		1		1
	1972 or Earlier		1		1
	No Date Given		8		9
Minor	-	8		10	
None		36		40	

n = 90
*Percentages do not add to 100 because of rounding

As indicated in Table 5-13, the majority of large-scale emergencies for which dates were supplied occurred in the past two years, but one agency reported using CB in a flood, which occurred in 1967. In addition to the 46 major emergencies, eight respondents reported minor emergencies. Finally, respondents for 36 agencies reported no experience with major emergencies (and did not choose to report lesser ones).

3.3 CB EQUIPMENT USED BY LOCAL CIVIL PREPAREDNESS AGENCIES

The amount of CB equipment owned by the various local civil preparedness agencies surveyed is summarized in Table 5-14. To the extent feasible, equipment

Table 5-14. Base Stations and Mobile Units in Use by Local Civil Preparedness Agencies

Table 5-14a. Base Stations

Locations	Number of Agencies Reporting	Percentage*
EOC	58	64
Planned	8	9
EOC & Other	8	9
Planned	4	4
Public Safety Offices	12	13

n = 90

Table 5-14b. Mobile Units

Number of Mobiles	Number of Agencies Reporting	Percentages*
None	50	56
1	12	13
2-5	12	13
6-10	12	13
11 or more	4	4

n = 90

* Does not add to 100 percent because of rounding

owned by volunteers and volunteer organizations has been separated from the totals in the table. Of the 90 agencies surveyed, respondents for 83 (or 92 percent of those surveyed) reported transmitting amplitude modulated double sideband signals. Of these, 12 agencies (or 9 percent) also reported transmitting single sideband signals. On.y four agencies (or 4 percent), reported operating equipment licensed in the General Mobile Radio Service.

As indicated in Table 5-14a, respondents for 66 local civil preparedness agencies (or 73 percent) reported having CB base station transceivers in their EOCs. Of these 66 agencies, one reportedly planned to install a new base station in its EOC; and two others planned to install either replacement or additional base stations in their EOCs. Eight of the 66 agencies also had at least one additional base station transceiver installed in another facility such as a local police department, fire department, or sheriff's office; four planned installations were to include installations in such allied facilities. Finally, 12 jurisdictions reportedly depended on CB base station transceivers installed in local public safety offices. In several cases, installation arrangements are interesting. For example, the Powell, Wyoming, Civil Defense Agency installed a CB transceiver in the Powell Police Department dispatch room. In an emergency that required activating the EOC, the transceiver would be moved into the EOC and connected to a preinstalled antenna. For another example, the Honolulu, Hawaii, Civil Defense Agency had a base station transceiver stockpiled for installation when and where needed; however, procurement of three additional base stations was planned by this agency.

Table 14-b summarizes mobile CB transceivers available to local civil preparedness agencies. As shown in the table, 50 respondents indicated that their agencies did not own any mobile CB transceivers. The other 40 agencies in the sample owned from one to 18 mobile transceivers. Not indicated in Table 5-14 are the CB-equipped MCCs operated by 21 of the agencies surveyed. Also not indicated in the table are the CB personal portables reportedly owned by 21 (or 23 percent) of the agencies surveyed. Of these 21 agencies, five owned a single personal portable unit; 12 owned two to five units; and four owned six to 10 units.

In addition, the respondents for at least 79 of the 90 agencies surveyed (or 88 percent of the agencies) reportedly had access to equipment owned by organized CB volunteers. At least 8 jurisdiction (or 9 percent of those surveyed) also reportedly had access to mobile CB transceivers furnished by police officers or other public safety personnel. No overall estimate is available of the amount of mobile CB equipment available from these sources, but estimates for volunteer owned transceivers supplied by some respondents ranged from as low as five to as high as 200 transceivers. Respondents for only eight local civil preparedness agencies indicated that they planned to buy new mobile CB units.

3.4 ALLIED AGENCIES REPORTED BY LOCAL CIVIL PREPAREDNESS AGENCIES TO BE USING CB RADIO EQUIPMENT

Respondents for 74 of the 90 agencies surveyed (or 82 percent) indicated that other agencies in or near their jurisdictions used CB equipment. Table 5-15 summarizes the combinations of agencies indicated in questionnaire responses. As indicated in the table, state police/state patrol agencies led in questionnaire responses (46 responses, or 51 percent of all respondents), followed by sheriff's offices (42 responses, or 47 percent), police departments (37 responses, or 41 percent), and fire departments (18 responses, or 20 percent). Of the respondents who indicated use of CB by sheriffs' offices, 38 (or 42 percent of all respondents) indicated a single department, while four respondents (4 percent) indicated two or more sheriffs' offices. Similiarly, among the respondents who indicated CB use by police departments, 33 (or 37 percent) indicated a single department, while four respondents (or 4 percent) indicated two or more departments. Of the 18 fire departments, at least four (or 18 percent) are volunteer departments. In addition, to the four types of agencies shown in Table 5-15, which predominated in questionnaire responses, a number of other agencies were occasionally cited in responses. These included school districts, tourist and visitors' bureaus, public works and highway departments, and government officials in general.

Table 5-15. Local Civil Preparedness Agency Reports of Allied Agencies Using CB Equipment

Other Agency	Combinations of Agencies										Number of Agencies Reporting
State Patrol/ State Police	x	x	x	x		x		x			46
Sheriff's Office	x	x		x	x				x		42
Police Department		x	x		x		x			x	37
Fire Department	x					x	x				18
Number of Agencies Reporting	10	8	8	8	8	4	4	8	8	8	74

n = 74

3.5 ORGANIZATIONAL STRUCTURES DEVELOPED BY LOCAL CIVIL PREPAREDNESS AGENCIES FOR USING CB RADIO

The local civil preparedness agencies surveyed indicated a variety of organizational structures for using CB radio. The approaches used to organize CB resources included:

- Developing and maintaining agency-sponsored CB organizations
- Cooperating with existing CB organizations
- Assigning responsibility for CB to agency staff members

These approaches were not mutually exclusive, but were used sometimes in combinations by the jurisdiction involved. In fact, as shown in Table 5-16,

Table 5-16. Structure of CB Radio Organizations Used by Local Civil Preparedness Agencies

Structure					
Agency Sponsored CB Group	Existing CB Group	Staff Function	Unknown	Number of Agencies Reporting	Percentage
X	X	X		4	4
X	X			12	13
X		X		4	4
	X	X		8	9
X				37	41
	X			17	19
		X		4	4
			X	4	6

n = 90

respondents from four of the 90 agencies surveyed reported using all three approaches. Respondents from a total of 24 agencies (or 26 percent of all agencies) indicated their agencies used two of the three organizational structures. The predominant organizational approaches to using CB, however, involved agency-sponsored CB organizations (in 37 of 90 agencies) and, to a lesser extent, outside CB organizations (in 17 agencies). Respondents from very few agencies reported organizaing staff members only to use CB.

Reported volunteer organization sizes ranged from as low as one or two members to as high as 400 members. As indicated in Table 5-17, 21 of the reported volunteer CB organizations fell into the range of 21 to 30 members, and a total of 45 volunteer CB organizations (or those serving one-half of the

Table 5-17. Numbers of CB Volunteers Supporting Local Civil Preparedness Agencies

Number of Volunteers	Number of Agencies Reporting	Percentages
None	4	4
1-10	8	9
11-20	8	9
21-30	21	23
31-50	4	4
51-100	12	13
101-200	4	4
201 or More	4	4
Unknown	29	32

n = 90
*Does not add to 100 percent because of rounding

local civil preparedness surveyed) fell into the range of 11 to 100 members. Three of the five agencies for which respondents reported using one or two volunteer members appear to have been developing their CB capabilities, and the volunteers were either the intended leaders of a future, larger volunteer body or provided liaison to outside volunteer groups. The remaining two agencies reportedly using one or two volunteers may have had connections with volunteer CBers in their community, but this was not completely clear from questionnaire responses.

The largest volunteer organizations identified in agency responses generally appear to have been coalitions of CBers organized to support local police department neighborhood watch programs. Five of the eight CB organizations in the size range of 101 or more members fell into this category. The lar-

gest single program reported was a 400-member Community Radio Watch organization, which operated under the Lansing, Michigan, Police Department. The Lansing volunteers, typically, belonged to several autonomous CB organizations and also included radio amateurs as well as commercial firms using two-way radio communications. (Community Radio Watch is discussed in Chapter VII, Section 3.4.)

Volunteers were reportedly trained in emergency operations by 33 local civil preparedness agencies (or 37 percent of the agencies surveyed). Another four agencies (or 4 percent) planned to initiate training programs. CB organizations had been delegated responsibility for training by 17 agencies (or 19 percent); 28 agencies (or 31 percent) made no provision for training CB volunteers; and four agencies reported not using volunteers. The descriptions of CB training programs supplied by respondents from agencies reportedly conducting their own training programs were almost universally inadequate to define how often training sessions occurred, training methods used, and even subjects for which training was provided.

CBers were actively recruited by 32 local civil preparedness agencies (or 36 percent of those responding); and four additional agencies (or 4 percent) planned to institute programs for recruiting CB volunteers. Of these 36 agencies respondents from 17 indicated recruitment was (or would be) through a combination of news media coverage and direct appeals to potentially interested CBers; four organizations reported limiting (or planning to limit) their recruiting efforts to direct contacts with CBers; and 15 respondents did not define their recruiting methods. CB organizations were responsible for their own recruiting according to respondents from 29 local civil preparedness agencies (or 32 percent of those surveyed). Respondents reported that 21 agencies (or 23 percent) had no recruiting programs; and that four agencies did not use volunteer CBers.

Among the most problematic aspects of CB support of local civil preparedness agencies are the agreements (or the absence of agreements) in effect between

CB organizations and agencies. Respondents supplied very spotty information on their agreements. Only 30 of 90 respondents indicated they had negotiated any agreements with CB organizations. Of these 30 agencies, 13 indicated their agencies had formal agreements with CB groups; 12 indicated they had informal agreements with CB groups; and five indicated a combination of formal and informal agreements. The large number of informal agreements reported by respondents from the agencies for which information is available, and the absence of any information from two-thirds of all respondents suggests that agreements between CB groups and local civil preparedness agencies are probably inadequate in many cases.

3.6 ACCEPTANCE OF CB VOLUNTEERS BY LOCAL CIVIL PREPAREDNESS AGENCIES

The degree to which volunteers were accepted by the 90 civil preparedness agencies surveyed was indicated by a number of responses. The local civil preparedness agencies surveyed were asked to indicate the degree to which volunteer CBers maintain operations and communications discipline. ("Operations discipline" was defined as the ability to get volunteers to a particular location when they were needed and in the numbers needed, as well as to keep them from going to locations in which their presence was undesirable. "Communications discipline" was defined as the ability to handle CB traffic in a prompt, reliable, error-free manner.) As indicated in Table 5-18, respondents for 49 agencies (or 54 percent of those surveyed) indicated that CB volunteers always maintained operations discipline; 33 (or 37 percent), sometimes maintained such discipline; and no respondents indicated continuous problems with achieving operations discipline. The performance of volunteers in maintaining communications discipline was rated less favorably, however, by local civil preparedness agency personnel. Only 33 of the respondents (or 37 percent) indicated that CB volunteers always maintain communications discipline, while 37 respondents (or 41 percent) indicated that they sometimes handle communications traffic in a disciplined manner. None of the respondents, however, indicated continuous problems in achieving communications discipline;

Table 5-18. Discipline Maintained by Volunteer Groups Assisting Local Civil Preparedness Agencies

Type of Discipline	Maintenance of Discipline			
	Always	Sometimes	Rarely	Unknown
Operations	49	33	0	8
Communications	33	37	0	20

n = 90

and 20 respondents (or 22 percent) indicated that they did not know how well their volunteers performed, or did not respond to the questions, suggesting that it may be harder to monitor communications discipline than operations discipline, especially when responsibility for CB communications has been delegated to volunteer organizations.

As another measure of the acceptability of CB volunteers, respondents indicated a surprisingly high willingness to use unaffiliated volunteers who simply showed up during an emergency and offered their services (see Table 5-19). Of the 90 agencies surveyed, respondents for 50 indicated past experience with unaffiliated volunteers was apparently sufficiently good that they planned to use such volunteers in the future. Respondents for another 17 agencies indicated they had no prior experience with unaffiliated CB volunteers, but were willing to use them. Against this total of 67 agencies (or 74 percent of respondents), respondents for only 16 agencies (or 18 percent of respondents) indicated that their agencies would not use unaffiliated CB volunteers in the future, 12 apparently on the basis of past problems and four without any past experience.

Table 5-19. Use of Unaffiliated Volunteers by Local Civil Preparedness Agencies

Experience	Number of Agencies Reporting	Percentage*
Used in Past; Will Use in Future	50	56
Used in Past; Will Not Use in Future	12	13
Have Not Used in Past; Will Use in Future	17	19
Have Not Used in Past; Will Not Use in Future	4	4
Unknown	8	9

n = 90
*Does not add to 100 percent because of rounding

3.7 CONTROL OF CB VOLUNTEERS BY LOCAL CIVIL PREPAREDNESS AGENCIES

In an effort to control CB volunteers, local civil preparedness agencies have developed a number of techniques for establishing communications discipline. (The questions asked related to establishing net control among CB volunteers; the responses, however, dealt more broadly with communications discipline and are treated accordingly.) Table 5-20 summarizes agency questionnaire responses on establishing communications discipline.

From an EOC (see Table 5-20), communications discipline was reportedly maintained by monitoring CB channels (29 agencies), by prior designation of the person or persons responsible for communications operations (24 agencies of which four respondents indicated those designated as responsible were local police department personnel), and by various other methods, which could not be classified on the basis of questionnaire responses (four agencies). It is

Table 5-20. Establishment of CB Communications Discipline by Local Civil Preparedness Agencies

Table 5-20a. From EOC

Method Used	Number of Agencies Reporting	Percentage*
Monitoring	29	32
Prior Designation	20	22
Police	4	4
Other	4	4
Unknown	33	37

n = 90

Table 5-20b. In Field

Method Used	Number of Agencies Reporting	Percentage*
Mobile Unit	8	9
MCC	21	23
Police	12	13
Other	12	13
Unknown	37	41

n = 90

*Does not add to 100 percent because of rounding

important to note that monitoring one or more emergency channels may well establish communications discipline, but does not necessarily lead to net control operations. Several respondents, interestingly, point out the disparity between monitoring and net control, and asserted that the CB Radio Service was not amenable to net control.

During field operations (see Table 5-20b), alternate methods of maintaining communications discipline were reportedly used. These included assigning responsibility to a CBer at the emergency site, who had established communications either with the EOC or his CB organization, depending on the organizational structure used (eight agencies); dispatching a CB-equipped MCC to the emergency site and operating out of it (21 agencies); placing CBers assigned to emergency operations under the control of police personnel at the scene of the emergency (12 agencies); and by various other methods, including prior designation of persons responsible for supervising emergency operations, and

others that could not be classified on the basis of information available (12 agencies). The large number of responses that did not indicate how communications discipline was maintained again probably reflected delegations of responsibility to volunteer CB groups outside of immediate agency control.

3.8 PROBLEMS ENCOUNTERED BY LOCAL CIVIL PREPAREDNESS AGENCIES IN USING CB RADIO

In evaluating actual or potential problems in using the CB Radio Service to support emergency operations, 62 of 90 local civil preparedness agency respondents reported that false reports transmitted by CBers (either as malicious acts or because of misperceptions of actual situations) were a negligible problem (see Table 5-21). A total of 20 respondents (or 22 percent of all

Table 5-21. Experience with False Reports by Local Civil Preparedness Agencies

Severity of Problems	Number of Agencies Reporting	Percentage
Negligible	62	69
Moderate	8	9
Severe	12	13
Unknown	8	9

n = 90

respondents) reported that erroneous reports were moderate or severe problems. A number of agencies such as the Joplin-Jasper County, Missouri, Civil Defense Agency, reported developing procedures requiring CBers to identify themselves before their reports were accepted. Others such as the Frederick-Tillman County, Oklahoma, Civil Defense Agency used the availability of CB-equipped police cars to inhibit false reports.

Similarly, 62 respondents reported their agencies had attempted to clear CB channels for emergency traffic (see Table 5-22a). Of the agencies involved,

Table 5-22. Attempts to Clear CB Channels by Local Civil Preparedness Agencies

Table 5-22a. Experience

Attempted to Clear Channels	Number of Agencies Reporting	Percentage
Yes	62	69
No	20	22
Unknown	8	9

n = 90

Table 5-22b. Severity of Problems

Severity of Problems	Number of Agencies Reporting	Percentage*
Negligible	33	53
Moderate	12	19
Severe	5	8
Unknown	12	19

n = 62

*Does not add to 100 percent because of rounding

getting noncritical traffic off CB channels reportedly caused negligible problems for 33 of them (see Table 5-22b) and moderate or severe ones for a total of 17 others (or 27 percent of agencies that had attempted to clear channels). A number of local civil preparedness agencies commented about using commercial broadcasting stations to indicate which CB channels were being used in a current emergency, or using the news media to indicate the channels that would be used in the event of a future emergency. The Woonsocket, Rhode Island, Defense Civil Preparedness Agency noted that members of its CB affiliate sometimes visited an offender in an effort to clear a channel--a technique apparently unusual in CB circles, but more common in the selfpolicing performed by radio amateurs.

Finally, respondents from 74 agencies reported that their agencies had noted that CBers were drawn to emergency sites by information heard over CB radio

(see Table 5-23a). Of these 74 agencies, respondents for 46 reported that the resultant problems were negligible ones; in contrast, a total of 16 agency respondents (or 22 percent of those reporting problems of CB-related crowd convergence) indicated that they considered the problems moderate to severe ones. A number of agency respondents commented that crowd convergence also occurred because private individuals could use scanning receivers to monitor public safety radio transmissions. In general, the attitude expressed toward the phenomenon was one of needing to recognize and plan for it; among the techniques used is supplying authorized CBers with identification cards. CBers, interestingly, have often been used for providing perimeter control to hold back the curious in major emergencies, including many of those reported on by local civil preparedness agency respondents.

Table 5-23. Crowds Attracted to Emergencies by CB as Observed by Local Civil Preparedness Agencies

Table 5-23a. Experience

Experienced Crowds	Number of Agencies Reporting	Percentage
Yes	74	82
No	15	17
Unknown	1	1

n = 90

Table 5-23b. Severity of Problems

Severity of Problems	Number of Agencies Reporting	Percentage
Negligible	46	62
Moderate	8	11
Severe	8	11
Unknown	12	16

n = 74

3.9 ATTITUDES OF LOCAL CIVIL PREPAREDNESS AGENCIES TOWARD ALTERNATIVE CB PROPOSALS

In comparison to responses from state civil preparedness agencies, a series of questions about organizing the CB Radio Service for use in emergency operations brought generally favorable responses, which are shown in Table 5-24. (State and local responses are discussed in Section 2.6 and are summarized in Table 5-8.

Table 5-24. Responses of Local Civil Preparedness Agencies to CB-Related Proposals

Proposals	Agree		Disagree		No Opinion	
	Number of Agencies	Percentage	Number of Agencies	Percentage	Number of Agencies	Percentage
Need to increase CB Channels*	37	41	46	51	8	9
Need to Create New Service	37	41	29	32	25	27
Need for RACES-Like Capabilities	63	69	13	14	16	18
Need to Provide Technical Assistance	75	82	8	9	8	9
Need to Develop Support Organizations	50	55	25	27	16	18

n = 90
*Percentages do not add to 100 because of rounding

A query about increasing the number of channels available to the CB Radio Service was opposed by respondents from 46 of 90 agencies. At least eight of the 37 agencies whose respondents favored the allocation of spectrum for additional channels, advocated the creation of dedicated emergency channels rather than overall expansion of the channels available to the CB Radio Service.

A query about the need to create a new service (such as that discussed for spectrum in the 220 MHz region), brought affirmative responses from 37 of 90 respondents and negative ones from 29 respondents, but 25 respondents did not offer an opinion. Those who advocated the new service saw it as solving the technical problems of the CB Radio Service or as an opportunity for the Federal Communications Commission (FCC) to establish a personal radio service over which it could exercise control. Several respondents saw a new service as a potential source of dedicated emergency channels. Those respondents opposing the new service generally felt that the CB Radio Service was adequate for their needs. Those who did not offer an opinion generally pleaded lack of knowledge about the characteristics and costs of a new service.

A proposal to create a CB capability similar to RACES brought a strongly supportive response with 69 respondents expressing favorable opinions; 13 unfavorable ones; and 16, no opinion. Of those favoring creation of such a CB capability, 21 respondents (or 23 percent) urged the inclusion of provisions for dedicated emergency channels; 4 respondents (or 4 percent) urged vesting the organizations chartered under such a capability with authority to control channels in an emergency; and one respondent urged authorizing a few high-powered stations for use only in emergencies. Respondents opposing the suggestion to create such a capability and who stated opinions, were equally divided among those who felt RACES was not effective, CBers lack discipline for RACES-type operations, and REACT and other CB organizations can perform all the functions necessary to make effective emergency use of CB.

The suggestion that DCPA provide guidance material and technical assistance produced very strong support with 75 respondents in favor of the concept and only eight opposed to it. In general, those who endorsed DCPA's supporting use of CB in emergencies called for provision of standing operating procedures (SOP) and model plans, training and training materials, and miscellaneous assistance. At least 29 respondents advocated the provision of SOPs and model plans; eight respondents, training assistance; and eight other respondents, SOPs, plans, and training programs. Several favorable respondents advo-

cated DCPA's working for improved FCC Rules and Regulations for using CB in emergencies. The respondents who were opposed to DCPA's providing guidance materials and technical assistance for the emergency use of CB expressed the opinion that the service is a local capability, which does not warrant DCPA involvement.

Finally, a query about developing civil preparedness support organizations to further the emergency use of CB was supported by respondents from 50 agencies and opposed by respondents from 25 agencies, with the remaining respondents not expressing opinions. In general, there was a consistent tendency of respondents to view these organizations as operational; however, the questionnaire tried to express the concept of organizations with information-exchange functions that would not operate during actual emergencies. The misperception of the question generally invalidates the responses except as another indication that those persons who replied favorably see value in the CB Radio Service and want to take advantage of any assistance available to them that may improve the performance of CB in emergencies.

CHAPTER VI

USE OF THE CB RADIO SERVICE BY STATE POLICE, STATE HIGHWAY PATROL, AND OTHER STATE AGENCIES

The state police and state highway patrol agencies in 48 states have been using CB equipment.[1] The use of the CB Radio Service by state police and state highway patrol agencies is of interest to DCPA for several reasons. The state police/state patrol agencies are a source of extensive--and increasing--amounts of CB equipment. These agencies are heavily involved in the management of highway traffic, which will give them an important role in the movement of people from risk areas to host areas during a situation requiring crisis relocation. Finally, many state police/state patrol agencies have special responsibilities in both state and local civil preparedness operations.

In addition to material on state police/state patrol agencies, this chapter also contains a brief state-by-state review of agencies (other than state civil preparedness agencies), which are reported to be using CB in their operations. This material is included to suggest the growing use of CB by a wide range of state agencies.

1. METHODOLOGY

The information in this chapter was collected principally by using a questionnaire specially designed for the purpose and sent to all 49 state police/state patrol agencies. (The questionnaire appears in Appendix G, pages G-29 through G-48.) Full responses were provided by respondents in 43 agencies; letter responses, by respondents in two additional agencies. In-person visits were made to the California Highway Patrol, the Colorado State Patrol, and the Illinois State Police. In addition, telephone interviews were conducted with personnel in six state police/state patrol agencies. One of these interviews

[1] Hawaii has no state police or state highway patrol; and the Rhode Island State Police was the only state police/state patrol agency with a complete prohibition against using CB.

was with the communications officer of an agency that had not returned a completed questionnaire, bringing the total responses to 46 of the 49 state police/state patrol agencies. Current magazines, newspapers, and other supplementary sources were reviewed to obtain additional background information.[1]

2. EVOLUTION OF STATE POLICE/STATE PATROL AGENCY USE OF CB RADIO

The change in official attitudes toward CB has been rapid and dramatic. In 1973 and 1974, truckers' use of CB to avoid speed limits became well known. Initially use of CB was anathema to most state police/state patrol agencies. In 1974, however, the Ohio State Highway Patrol began installing CB base stations in its posts; this organization had a history of using CB through active involvement with REACT teams.[2] In the same year, the Missouri State Highway Patrol also began to install transceivers in both its patrol cars and its posts.[3] In 1975, a survey of state police/state patrol agencies indicated that only two of 45 respondents believed the benefits of CB outweighed its disadvantages.[4]

Additional state police/state patrol agencies, nevertheless, determined that it was more desirable for them to monitor CB traffic than to disregard it. Monitoring allowed state police/state patrol agencies to obtain information on

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[1] Of particular value were a personal communication from R.E. Ellis (formerly Director, Communications Division, Metropolitan Police Department, Washington, D.C.) containing the results of his survey of CB use by state police/state patrol agencies, November 21, 1977; and Len Buckwalter, CB Channel Directory, Grosset and Dunlap Publishers, New York, N.Y., 1977.

[2] R.M. Chiaramonte and H.B. Kreer, "Measuring the Effectiveness of a Volunteer Emergency-Monitoring System in the Citizens Radio Service," Highway Research Record, Volume 402, 1972; W.G. Trabold and G.H. Reese, "Performance of Volunteer Monitors Using Citizens Band Radio for a Highway Communications Service," Transportation Research Record, Vol. 495, 1974.

[3] S.S. Smith, "Partners in Motorist Aid, CB and Missouri Highway Patrol," Traffic Safety, Vol. 75, No. 6, June 1975, pp. 21-23; W.S. Dawson, "Smokey in a Blue Wrapper with a Camera at Milepost 50," Police Chief, Vol. 42, No. 7, July 1975, reprinted in APCD Bulletin, Vol. 42, No. 5, May 1976, pp. 12-16, 34-35.

[4] General Accounting Office, Actions Taken or Needed to Curb Widespread Abuse of the Citizens Band Radio Service: Report to the Congress by the Controller General of the United States, GGD-75-88, October 14, 1975, pp. 6-7.

dangerous highway conditions, unsafe driver performance, and motorists in distress--often from the very truckers who also used CB to evade the law. Monitoring also allowed state police/state patrol officers to overhear truckers and other motorists coordinating their evasion of speed limits and other highway safety regulations and even to warn speeders to slow down. Monitoring also showed that drivers were often erroneous in reporting the positions of patrol cars (so-called Smokey reports) and that errors in these reports often multiplied wildly, as drivers repeated them. It has almost become dogma among state police/state patrol agencies that Smokey reports increased the apparent presence of patrol cars on the highways. Like many dogmas, however, this one has not been verified by hard evidence.

In early 1975 the National Highway Traffic Safety Administration (NHTSA) recommended using CB to increase highway safety (see Chapter IV, Section 2). Following the leads of Ohio, Missouri, and NHTSA, additional agencies began using CB equipment, either by purchasing it, by allowing their officers to install their own equipment, or by combining these approaches. In January 1976, the Associated Public Safety Communications Officers (APCO), the professional organization of public safety communications personnel, adopted a resolution promoting the use of CB by public safety agencies.[1] In November 1976, NHTSA created the National Emergency Action Radio (NEAR) program, which allowed states to apply federal highway safety block grant funds to developing or expanding state CB capabilities.

Changes in the use of CB radio by state police/state patrol agencies have occurred so rapidly that it has been virtually impossible to maintain information current.[2] The latest and most extensive information, that from the survey undertaken for this report, is discussed in the remainder of this chapter. The information contained in the chapter is complete as of July 1, 1977.

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[1] APCO, "Citizens Band Emergency Channels, a Legitimate Public Safety Resource," resolution passed by the Board of Officers, January 15, 1976, in APCO Bulletin, Vol. 42, No. 5, May 1976, p. 38.

[2] Ellis' survey predates the current one by a month or two and shows fewer agencies using CB and less CB equipment in use. Two prior surveys show the progressive expansion of CB use: L.E. Koehler, et al., Motorist Aid Transceiver, FHWA, FHWA-RD-76-123, Vol. 2, March 1976, pp. 26-36; I. J. Fullerton, et al., Motorist Aid Systems Study: State-of-the-Art Report, FHWA, DOT-FH-11-8745, August 1976, pp. 85-88.

3. CB RADIO EQUIPMENT IN USE BY STATE POLICE/STATE PATROL AGENCIES

At the time the survey of state police and state highway patrol agencies was completed, installation of CB transceivers in agency cars, except those belonging to the Rhode Island State Police, was governed by one of four policies:

1. Complete State-Funded Installation. All cars (or at least all patrol cars) were equipped with state-furnished CB transceivers. At the time of the survey, 12 agencies fell into this category.
2. State-Funded Partial Installation. All CB transceivers used in agency cars were furnished by the agency. The agency, moreover, had a policy specifically prohibiting its officers from installing their own CB transceivers even though the agency had installed only a limited number of CB transceivers. At the time of the survey, only two state police/state patrol agencies fell into this category.
3. Mixed State-Funded/Officer-Furnished Installation. The state police/state patrol agency had equipped some of its cars with CB transceivers, and had a policy allowing its officers to equip additional cars with their own transceivers. As of the completion of the survey, 20 agencies fell into this category.
4. Officer-Furnished Installation. All CB transceivers in use in agency cars were supplied by agency personnel at their own expense. At the time covered in the survey, 14 agencies fell into this category. Of these, 13 had policies allowing use of officer-furnished CB equipment; the New Jersey State Police had no policy on this matter, but, nevertheless, allowed its officers to use their own CB transceivers.

Implementation of these policies by the various state police/state patrol agencies is discussed in the following sections. The discussion also includes, as appropriate, information on the extent to which state police/state patrol agencies installed CB transceivers in their fixed facilities as well as in special mobile vehicles such as mobile command/communications centers (MCC)[1] and 4-wheel-drive vehicles.

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[1] MCCs are radio-equipped vehicles from which an agency's command functions, communications functions, or a combination of both can be performed at emergency locations.

Appendix E contains an overall summary of the types and amounts of CB equipment used by state police/state patrol agencies.

3.1 COMPLETE STATE-FUNDED INSTALLATIONS

The 12 state police/state patrol agencies that had equipped all or substantially all their cars with state-funded CB transceivers include:

1. Georgia Department of Public Safety
2. Illinois State Police
3. Iowa State Patrol
4. Maine State Police
5. Mississippi Highway Safety Patrol
6. Missouri State Highway Patrol
7. Ohio State Highway Patrol
8. South Carolina State Highway Patrol
9. South Dakota Highway Patrol
10. Tennessee Department of Safety
11. West Virginia State Police
12. Wyoming State Highway Department

The capabilities of these agencies are summarized in Table 6-1. The 12 agencies accounted for more than 6,800 CB-equipped cars. Of these 12 agencies, all but Maine, Vermont, West Virginia, and Wyoming had installed base station transceivers in a number of agency facilities. These installations are extensive in Illinois (45 weigh stations, area offices, and district offices), Missouri (60 troops and weigh stations) and Ohio (57 posts). The Mississippi Highway Safety Patrol had installed base stations in 10 state locations and supplemented this limited deployment by installing base stations in a large number of cooperating sheriffs' offices, police departments, and fire departments. The Illinois State Police planned to install an undetermined number of mobile and base station transceivers in county and local emergency services vehicles and fixed locations throughout the state (see Chapter IV, Section 2.6). Finally, the Missouri State Highway Patrol was experimenting with remotely controlled

Table 6-1. CB Equipment Used by State Police/State Patrol Agencies with All State-Equipped Cars

STATE	CARS	FIXED FACILITIES	SPECIAL MOBILES
Georgia	500	15 Posts (of 45)	1 MCC
Illinois	1,750	45 Areas, Districts, Weigh Stations	4 MCC; 5 Other
Iowa	430	14 Districts	1 MCC
Maine	200	None	Unk
Mississippi	375*	HQ, 9 District Substations, c.150 PDs, SOs, FDs	None
Missouri	740*	60 Troops, Weigh Stations; 3 Remote Bases on Interstate Highways	None
Ohio	950	57 Posts	1 MCC
South Carolina	700	16 Dispatch Centers	Unk
South Dakota	170*	6 Districts	None
Tennessee	500	8 Districts	1 MCC; 5 Other
West Virginia	380	None	16 4WDS
Wyoming	142	2 Offices	None
Total	6,837	c.386	7 MCCs; 16 4WDs; 10 Other

*Patrol cars only

MCC - Mobile Command/Communications Center; 4WD - 4-Wheel-Drive Vehicle; PD - Police Department; SO - Sheriff's Office; FD - Fire Department; c. - Approximately

base stations, to fill gaps in the coverage directly available from troop headquarters. These base station transceivers were connected to the nearest troop headquarters by telephone lines, and emergency calls and requests for assistance were received and processed by troop dispatchers. Successful completion of the experiment may lead to implementing this approach on Missouri's interstate highways.

Table 6-1 also shows that at least six of the state police/state patrol agencies listed had equipped special vehicles with CB transceivers. In three of these agencies, the special vehicles were MCCs. Two agencies had both MCCs and other vehicles. In addition to its four CB-equipped MCCs, the Illinois State Police had also equipped five aircraft with CB transceivers. This application was intended for routine traffic surveillance. The application of airborne CB transceivers to crisis relocation situations is of potential importance, however, because of the range afforded by antennas located hundreds or thousands of feet above the ground and also because of the pilots' ability to observe activity over wide areas. In addition to its CB-equipped MCC, the Tennessee Department of Safety had also equipped five other special vehicles, which its respondent identified only as tactical vehicles, with CB transceivers. Finally, the West Virginia State Police had equipped 16 4-wheel-drive vehicles with CB transceivers.

3.2 STATE-FUNDED PARTIAL INSTALLATIONS

Two agencies, the Oregon State Police (OSP) and the Virginia State Police (VSP), have policies prohibiting their officers from installing their own CB transceivers in state patrol cars. The OSP, however, installed transceivers in 100 cars, equipping 20 percent of all agency cars. OSP has also installed base station transceivers in 18 offices located on three cross-state highways. VSP experimentally installed an unknown number of mobile transceivers, and evaluated their performance. Up to now all CB equipment, except that being tested, had been banned from VSP cars and facilities; however, reports to the

National Highway Traffic Safety Administration indicated the success of the VSP test, the intention of VSP to use NHTSA funds to equip additional cars, and interim plans to allow officers to install their own transceivers.[1]

3.3 MIXED STATE-FUNDED/OFFICER-FURNISHED INSTALLATIONS

A total of 20 state police/state patrol agencies, had equipped some of their patrol cars with CB transceivers and allowed their officers to equip additional ones. These agencies are listed in Table 6-2.

Several of these agencies had installed CB equipment in high percentages of their cars. Most notably the Alabama Department of Public Safety (ADPS) and the North Dakota State Highway Patrol (NDSHP) had equipped virtually all their cars with CB transceivers using a mix of state- and officer-furnished units. ADPS equipped 300 of its approximately 350 cars with state-furnished transceivers; an additional 35 officer-furnished transceivers were in use. NDSHP had 50 state-furnished and 45 officer-furnished transceivers in its 95 cars. In addition, the Wisconsin State Patrol had CB transceivers in 55 percent of its cars, over three quarters of them furnished by the state. The California Highway Patrol (CHP) and the Texas Department of Public Safety (TDPS) had installed CB transceivers in about half of their cars, but the absence of precise figures on officer-furnished transceivers made it impossible to estimate the total number of cars equipped.

The CHP recently installed 900 state-furnished transceivers; this installation was part of a test, which may eventually lead to a more extensive deployment of state-funded CB transceivers. Outside evaluators were retained to assess agendy performance in comparable areas of the state with and without CB transceivers in agency cars. While the test has been in progress, the CHP has allowed its officers to install their own equipment in cars operating outside of test areas. In contrast, the TDPS installation involved only a small number of state-furnished transceivers and a large number of officer-furnished units.

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[1] Telephone conversation with Joseph Bernard, NHTSA, January 26, 1978.

Table 6-2. CB Equipped Cars Used by State Police/State Patrol Agencies with both State- and Officer-Furnished Tranceivers

State	Total Cars	State Equipped Cars	Officer Equipped Cars	Total Cars Equipped	Percentage Cars Equipped
Alabama	c. 350	300	35	335	c. 96
Alaska	325	25	5	30	9
California	1,976	900	Unk	>900	>46
Connecticut	900	8	c. 50	c. 58	c. 6
Delaware	323	10	50	60	19
Kentucky	1,000	25	100	125	12
Maryland	1,200	Unk	250	>250	>21
Michigan	645	Unk	Unk	100	16
Minnesota	504	11	116	127	25
Montana	180	Unk	Unk	30	17
New Mexico	335	23	136	159	47
New York	700	155	Unk	>155	>22
North Carolina	1,150	12	350	362	31
North Dakota	95	50	45	95	100
Pennsylvania	1,800	23	50-75	73-98	4-5
Texas	908	25	400-500	425-525	47-58
Utah	325	2	139	141	43
Vermont	225	4	46	50	22
Washington	775	35	150	185	24
Wisconsin	376	155	50	205	55
Total	c. 14,092	>1,763	>1,972	>3,865	>27

c. - Approximately; > - Greater than

The New Mexico State Police (MSP) and the Utah Highway Patrol (UHP) had equipped 47 and 43 percent of their cars, respectively, with CB transceivers. A large percentage of NMSP and UHP installations (especially the latter) used officer-furnished transceivers.

In contrast, many of the other agencies shown in Table 6-2, had relatively small numbers of cars equipped with either state- or officer-furnished transceivers. Twelve agencies had installed CB equipment in 25 percent or less of their cars; and three agencies had equipped less than 10 percent of their cars.

The New York State Police (NYSP) was testing 155 state-furnished mobile transceivers and 22 base stations installed in cars and offices in a seven-county test area. Outside evaluators were retained to conduct the test. During the test, the NYSP allowed its officers to install their own CB equipment in cars operating outside the test area. As was the case with Virginia State Police, recent reports to NHTSA indicated the success of the NYSP test and the intention of the agency to use NHTSA funds to expand its CB capabilities.[1]

In a number of states, the state police/state patrol agencies had a large number of cars of which only small numbers were equipped with CB transceivers. The Connecticut and Pennsylvania State Police are notable examples. In almost all of the agencies in which lower percentages of their cars were equipped with CB transceivers, the amount of officer-furnished equipment in use far exceeded the amount of state-furnished equipment. Two of the agencies listed in the table (the Connecticut State Police Department and the Vermont Department of Public Safety), however, planned to install CB transceivers in all of their patrol cars.

Several of the state police/state patrol agencies listed in Table 6-2 also owned transceivers installed in their fixed facilities, in special vehicles, or in both. These installations are summarized in Table 6-3. The Michigan State Police, in particular, had an extensive compliment of CB base stations. The New York State Police had 22 CB base stations in a seven-county experimental

[1]Telephone conversation with Joseph Bernard, NHTSA, January 26, 1978.

Table 6-3. Fixed Facilities and Special Mobile Units Used by State Police/State Patrol Agencies with State- and Officer-Equipped Cars

State	Fixed Facilities	Special Mobiles
Alabama	18 Posts	1 MCC
Alaska	None	11 4WDs; 5 Other
California	Considering installing base stations at weigh stations	Unk
Connecticut	8 Troops (of 12)	None
Delaware	HQ; 5 Troops (of 8)	1 MCC
Kentucky	16 Posts	None
Maryland	2 Barracks	2 MCC
Michigan	57 Posts	None
Minnesota	11 Dist. Com. Ctrs.	1 MCC
Montana	7 Troops	Unk
New Mexico	None	10-Other
New York	22 Offices	Unk
North Carolina	None	1 MCC
North Dakota	None	None
Pennsylvania	1 Station	10 MCCs and Temporary MCCs; 8 Other
Texas	4 Disp. Ctrs.	None
Utah	None	Unk
Vermont	None	5 4WDs
Washington	5 Disp. Ctrs.	Unk
Wisconsin	7 Districts (of 8)	1 MCC
Total	154	17 MCCs; 16 4WDs; 24 Other

HQ - Headquarters; Dist. Com. Ctr. - District Communications Center; Disp. Ctr. - Dispatch Center; MCC - Mobile Command/Communications Center; 4WD - 4-Wheel-Drive Vehicle; Unk - Unknown

installation; coverage in that state may be expanded to additional counties in the future. The remaining 11 state police/state patrol agencies using CB base stations had only limited capabilities; Alabama (18), Connecticut (8), Delaware (6), Kentucky, (16), Maryland (2), Minnesota (11), Montana (7), Pennsylvania (1), Texas (4), Washington (5), and Wisconsin (7). The Washington State Patrol (WSP) has its five base stations concentrated in the eastern part of the state, but the WSP respondent indicated that his agency moved its base stations, as needed, to cover changing demands. The Pennsylvania State Police base station was a test installation leading to installations in all 48 stations.

At least nine of the 20 agencies in Table 6-3 had special vehicles equipped with CB transceivers. Of these, five had only one or two MCCs. The Pennsylvania State Police (PSP) respondent reported six MCCs and four trucks that could be used temporarily as MCCs. The PSP respondent also reported 8 other CB-equipped special vehicles--two all-terrain vehicles and six helicopters. Like the CB-equipped aircraft operated by the Illinois State Police, the PSP's CB-equipped helicopters are of particular interest in situations involving crisis relocation. Of the three remaining agencies in Table 6-3 that had CB-equipped special vehicles, the Alaska State Troopers (AST) and the Vermont Department of Public Safety both had 4-wheel-drive vehicles equipped with CB transceivers; the AST also had five boats so equipped. Finally, the New Mexico State Police had 10 unmarked cars equipped with CB transceivers for use by narcotics agents.

3.4 OFFICER FURNISHED INSTALLATIONS

A total of 14 state police/state patrol agencies had no state-furnished CB equipment installed in patrol cars, but had allowed their officers to install their own CB transceivers in them. Respondents from 10 of these agencies reported the quantities of equipment involved. These agencies are listed in Table 6-4. As indicated in the table, six of the 10 agencies had 50 percent or more of their cars equipped with officer-furnished CB transceivers. The New Hampshire State Police, which reported the lowest percentage of CB-equipped cars of all the agencies listed in Table 6-4 still had 29 percent of its cars equipped with officer-furnished transceivers.

Table 6-4. CB Equipment Used by State Police/State Patrol Agencies with Officer-Equipped Cars Only

State	Total Cars	Officer-Equipped Cars	Percentage Cars Equipped	Fixed Facilities	Special Mobiles
Arizona	c. 500	270	c. 54	None	None
Colorado	400	200	50	3 Offices	Unk
Idaho	·165	50	30	None	None
Indiana	1,000	500	50	19 Dist. HQ	None
Kansas	409	170	42	6 Divisions (of 7); 1 District	None
Louisiana	600	400	67	11 Troops	None
Nebraska	317	216	68	HQ; 5 Troops; 4 Posts	1 MCC
Nevada	155	50	32	None	None
New Hampshire	248	71	29	1 Substation	None
Oklahoma	550	300	55	None	Unk
Total	c. 4,344	2,227	c. 51	51	1 MCC

Dist.HQ - District Headquarters; MCC - Mobile Command/Communications Center; c. - Approximately

In addition to the 10 agencies listed in Table 6-4, the respondents for the Arkansas State Police, Massachusetts State Police, and the New Jersey State Police indicated that all mobile CB transceivers in use in their cars were supplied by their officers; however, these agencies did not indicate the numbers of units involved.

The respondent for the Florida Highway Patrol (FHP) indicated his agency was testing the use of CB in patrol cars on the Florida Turnpike using officer-furnished transceivers. The respondent failed to indicate the number of cars participating in the test. FHP officers were not allowed, however, to use personal CB equipment in agency cars operating outside the test area.

Although they did not own any mobile transceivers, seven of the agencies listed in Table 6-4 owned base station transceivers: Colorado (3), Indiana (20), Kansas (7), Louisiana (11), Nebraska (11), New Hampshire (1), and New Jersey (2). In at least one case--that of the Colorado State Patrol (CSP)--, several of the base stations in use had been donated by local communities for use in their CSP offices. Finally, of all agencies listed in Table 6-4, only the Nebraska Highway Patrol owned a CB-equipped special vehicle, specifically an MCC.

4. USES OF CB COMMUNICATIONS REPORTED BY STATE POLICE/STATE PATROL AGENCIES

The purposes for which state police/state patrol agency respondents reported using the CB Radio Service are summarized in Table 6-5. Of the 41 agencies for which respondents supplied this information, 33 (or 80 percent) indicated that their agencies used the CB Radio Service both to communicate with the public and to coordinate support from volunteers. Of these 33 respondents, four also indicated that their personnel use the CB Radio Service for communications within their agencies (generally for car-to-car communications), or for interagency communications when no other means of communications were available. One respondent indicated that personnel in his agency monitored CB channels to detect attempted law violations; and one respondent indicated that his agency used CB radio as a substitute for the telephone in areas lacking

Table 6-5. Purposes for which State Police/State Patrol Agencies Own CB Equipment

Purposes for Using CB	Combination of Purposes							Number of Agencies Reporting
Talking to the Public	x	x	x	x	x			39
Volunteer Support	x	x	x			x	x	35
Agency Communications		x						4
Other			x		x		x	4
Number of Agencies Reporting	27	4	2	5	1	1	1	41

telephone service. Six agency respondents of the 41 supplying information (or 15 percent) indicated that personnel in their agencies used CB only for communicating with the public; and two others (or 5 percent), only for coordinating volunteer support. One of the former respondents indicated that agency personnel also used CB channels for communicating with tow trucks during winter storms, while one of the latter respondents indicated that his agency's personnel monitored CB channels to detect violations of the law. The high reported use of CB to coordinate with volunteer organizations (indicated by 35 of 41 agencies, or 85 percent) did not completely accord with the relatively limited use most state police/state patrol agencies indicated making of volunteer organizations. For example, of the two agencies reporting using CB only to coordinate volunteer support, one (the Maryland State Police) had established working relations with a large number of volunteer CB organizations, but the other agency (the Massachusetts State Police) had not established cooperative arrangements with any volunteer CB groups.

Respondents for a total of 39 state police state patrol agencies indicated a wide variety of experience with CB. Their reported experiences are summarized in Table 6-6. As might be expected, all 39 respondents reported highway-oriented uses such as receiving reports of hazardous highway conditions, dangerous driver performance, and motorists in need of assistance. Somewhat surprisingly, respondents for only nine state police/state patrol agencies (or 23 percent) reported that their agencies used CB exclusively for highway-related purposes. The remaining 31 respondents (or 79 percent) indicated their agencies made one or more additional uses of CB radio. The most common additional uses of CB were in coordinating search and rescue activities (reported by 27 respondents, or 69 percent); in conducting severe weather watches (reported by 22 respondents, or 56 percent); and in supporting natural disaster operations (reported by 18 respondents, or 46 percent). Only a few state police/state patrol agency repondents reported using CB either to support industrial accident operations or to assist with public functions such as parades and fairs.

Despite the numerous reports of CB use in other than highway-related applications, the number of examples of large-scale emergencies cited by respondents was small. Although the term "large-scale emergencies" was intentionally not defined in the questionnaire, only six state police/state patrol agencies provided any examples. (Only five agencies indicated that they did not have any experience with large-scale emergencies; the remaining agencies returning questionnaires simply did not answer the question). Of the six examples supplied one was clearly trivial (providing assistance to a robbery victim) and another was perhaps a decade old (a well known search for a lost child, which proved to be a hoax). The respondent for the Alaska State Troopers reported his agency used CB radios to coordinate with truckers in the Trans-Alaska Pipe System (TAPS) corridor--an interesting and important use, but certainly not a large-scale emergency; however, the Alaska State Troopers claimed only highway-related experience. The respondent for the Delaware State Police cited a 7-hour detour (no date given) around a major accident, coordinated primarily over CB; the Delaware State Police respondent also

Table 6-6. Experience with CB Reported by State Police/State Patrol Agencies

Experiences With CB	Combinations Of Uses												Number of Agencies Reporting
Highway Services	x	x	x	x	x	x	x	x	x	x	x	x	39
Search and Rescue		x	x	x	x	x		x	x	x	x		
Weather Watches			x	x	x		x		x	x		x	22
Natural Disaster Operations				x	x	x	x			x	x		18
Industrial Accident Operations					x				x				3
Public Functions								x		x	x		3
Number of Agencies Reporting	9	4	5	10	2	2	2	1	1	1	1	1	39

claimed primarily highway-related CB experience for his agency. The Mississippi Highway Safety Patrol cited use of CB during ice storms in January 1977. Finally, the Oregon State Police cited use of CB in the recovery of a damaged boat and the rescue of the persons on board. The absence of more (and better) examples of large-scale emergencies suggests that the uses of CB in other than highway-related applications claimed in Table 6-6 were either exaggerated, or that the details of nonhighway applications were only vaguely known to the headquarters persons who completed questionnaires. In contrast, volunteer CB organizations responded much more consistently to queries about their experiences in major emergencies, perhaps because such experiences loomed larger in the overall activities of such groups and because those who responded actually participated in the emergencies reported (see Chapter VIII, Section 3).

5. MANAGEMENT OF CB USE BY STATE POLICE/STATE PATROL AGENCIES

Management of a communication resource such as CB radio involves a number of factors such as plans for use; organizational structure to support those plans; collection of information upon which to base management decisions; and manpower necessary to implement the decisions. Each of these aspects of state police/state patrol management of CB radio is discussed below.

5.1 PLANS AND PROCEDURES FOR USING CB RADIO

In order to accommodate CB use, many state police/state patrol agencies have adopted CB plans, procedures, or both. The questionnaire responses were such, however, that it was often impossible to tell whether a particular state police/state patrol agency had adopted a CB plan, a standing operating procedures (SOP) for the use of CB, or both. The problem was further compounded by the refusal of many agencies to make their plans and procedures available. To the extent that agency respondents indicated or, alternatively, included copies of their guidance materials with their completed questionnaires, it appears that most agencies drafted SOPs, rather than CB communications plans.

Table 6-7 indicates that 24 agencies had CB plans or procedures as of the completion of the survey and that another 15 agencies were preparing them. Together these categories accounted for 79 percent of the state police/state patrol agencies for which information was furnished. Considering only the 12 agencies that completed installation of state-furnished CB transceivers in all their cars (see Section 3.2), over 83 percent had or were preparing CB plans or procedures. The geographic distribution of the 24 completed CB plans or procedures is shown in Figure 6-1. Figure 6-1 also shows the year in which the plan or procedure was originally drafted, or was most recently updated. By far the greatest number of plans and procedures were produced in 1976, when many agencies overcame their initial resistance to CB and decided to use CB (or allowed their officers to do so).

Table 6-7. State Police/State Patrol Plans and Procedures for Use of CB Radio

Status	All States Number	All States Percent	Complete State-Funded CB Number	Complete State-Funded CB Percent*
	n=44		n=12	
Existing Plan or Procedures	24	55	8	67
Plan or Procedures Being Prepared	15	34	2	17
No Plan or Procedure	5	11	2	17

*Does not add to 100 percent because of rounding

5.2 MANAGEMENT STRUCTURES FOR CB RADIO

The introduction of CB resources into state police/state patrol agencies made only a negligible impact upon agency management. Respondents for only three agencies indicated that their agencies had made changes in their organizational structures to accommodate the use of CB. One agency respondent did not identify the nature of the change, and his agency does not, in fact, appear to have made any substantial organizational changes. Respondents for the two other state police/state patrol agencies indicated that their agencies' organizational changes consisted of installing CB equipment. The meaning of these statements is not clear. It is possible to speculate, however, that these two respondents recognized that using CB radio created alternate paths for the flow of information between members of the public and agency personnel, and that these paths are more direct than the ones used in the past. The new paths may bypass controls on uses of personnel and other resources normally imposed by agency dispatchers and supervisory personnel.

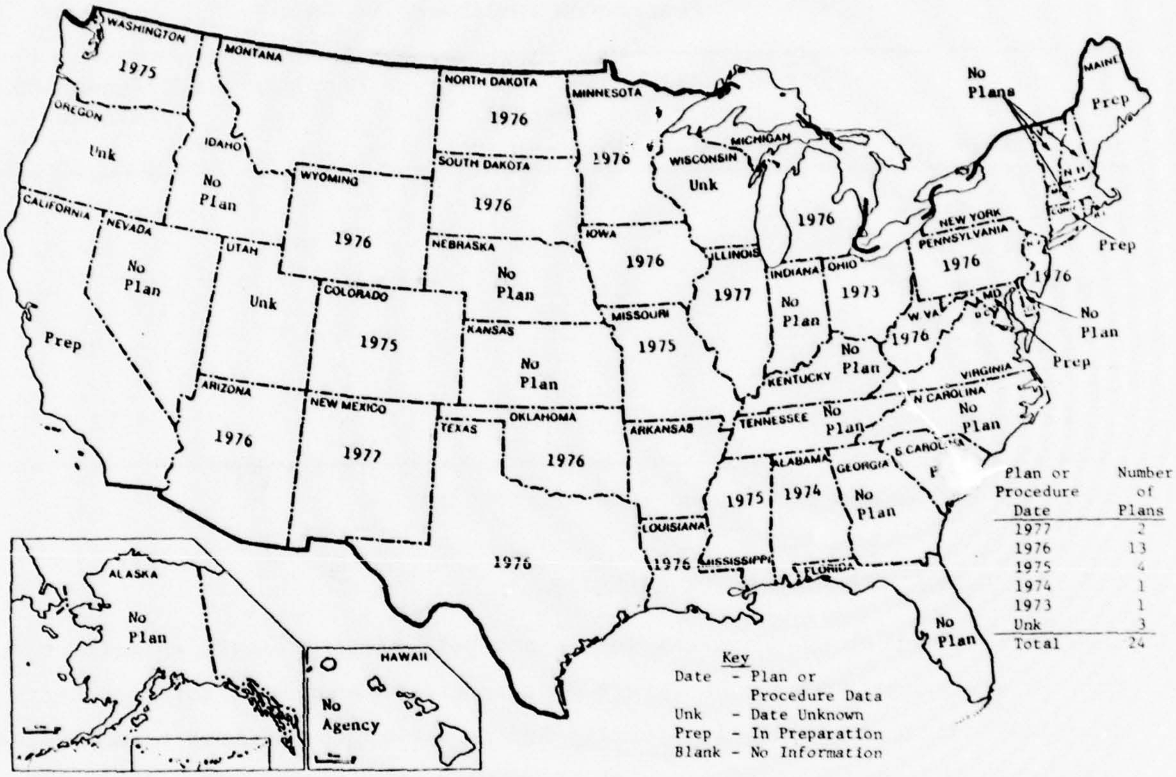

Figure 6-1. State Police/State Patrol Agency Plans and Procedures for Use of CB Radio

The two responses gave no indication, however, that the agencies involved were actually making any effort to exercise discipline over these new information-flow paths. In fact, only one agency response dealt explicitly with this issue (under future hardware plans rather than under organizational structure). Plans for that agency called for installing CB base station transceivers at all fixed locations in an attempt to place supervisory personnel in control of agency resources. Recognition of a possible problem by a very few agencies simply emphasizes the probable need for most state police/state patrol agencies to develop increased sophistication in managing the use of CB.

5.3 DECISION INFORMATION FOR CB RADIO

Respondents for only a few state police/state patrol agencies indicated that their agencies collected information to be used for developing management policies. As indicated in Table 6-8, respondents for only four states reported that their agencies collected both operations information (numbers of calls by type and disposition) and reliability information (maintenance time required to keep CB transceivers operating properly); 13, operations information only; and four, reliability information only. Almost one-half of the agencies reported that they collected neither type of information.

Table 6-8. Types of Information Collected by State Police/State Patrol Agencies

Types of Information	All States Number (n=44)	All States Percent (n=44)	Complete State-Funded Number (n=12)	Complete State-Funded Percent* (n=12)
Operations and Reliability Statistics	4	9	1	8
Operations Statistics Only	13**	30	5†	42
Reliability Statitics Only	4	9	1	8
Neither Operations nor Reliability Statistics	20††	45	4	33
No Answer	3	7	1	8

*Does not add to 100 percent because of rounding
**Includes three agencies that reported collecting operational statistics, but did not answer question about reliability statistics
†Includes one agency planning to collect operational statistics
††Includes seven agencies that reported not collecting operational statistics, but did not answer question about reliability statistics

Since the levels of state police/state patrol agency involvement in CB operations and maintenance were highly variable, it may be unrealistic to expect all agencies using CB to collect statistics on operations and reliability. It does not seem unreasonable, however, to expect state police/state patrol agencies with major investments in CB equipment to collect both types of statistics. However, review of information received from the 12 agencies that had equipped all their cars with CB transceivers gave a very mixed picture. Of these 12 agencies, respondents indicated that only one collected both operations and reliability statistics; five, operations statistics only; and one, reliability statistics only. Of the 12 agencies, one-third reportedly collected neither type of information.

Even when information is purportedly available it may be of questionable quality. For example, of the eight state police/state patrol agencies claimed by respondents to collect reliability statistics, only one gave a quantitative measure of findings; the others settled for "adequate," "low maintenance," and similar qualitative evaluations. (According to data collected by the Minnesota State Highway Patrol, CB radios, which are consumer electronics devices, had reliabilities comparable to public safety radios; both types required about three hours of maintenance per year.) Since the cost of maintaining CB radios can be a critical budget item for many agencies, it is surprising that more agencies had not collected quantitative information on this aspect of their use. Similarly, many of the operations statistics collected by state police/state patrol agencies seem to be less than rigorous.

5.4 MANPOWER REQUIREMENTS FOR USING CB RADIO

Another measure of the sophistication with which CB was managed shows in the amounts of manpower reportedly committed to it by various state police/state patrol agencies. Despite the large numbers of CB transceivers installed by various state police/state patrol agencies, however, only the respondent for the Tennessee Department of Safety (TDS) indicated that his agency had added manpower because of its use of CB. TDS installed CB transceivers in all 500

of its cars; it also added two technicians to install and maintain its CB equipment. The addition of CB radios to agency inventories in quantities comparable to their inventories of public safety radios, even assuming comparable maintenance requirements, is likely to have an impact on staffing levels presently unrecognized by (or at least not acknowledged by) state police/state patrol agencies.

6. CHANNELS AND EMISSIONS USED BY STATE POLICE/STATE PATROL AGENCIES

The channels monitored by state police/state patrol agencies are summarized in Table 6-9. As indicated in the table, 30 of the 36 agencies for which respondents provided information (or 68 percent of all respondents) monitored Channel 9. Of these 30 agencies, 14 also monitored Channel 19 because

Table 6-9. Channels Monitored by State Police/ State Patrol Agencies

Channels Monitored	Number of Agencies Reporting	Percentage
Channel 9	14	32
Channel 9 and 19	14	32
Channel 9 and Another Channel	2	5
Channel 19	4	9
Channel 23	1	2
Channel 19 and 23	1	2
No Answer	8	18

n = 44

of its heavy use by truckers and other drivers, and two others monitored another channel, presumably selected by officers because it was used locally

by motorists). Of the agencies that monitored Channels 9 and 19 (or another channel) either of two arrangements was generally used: (1) fixed locations monitored Channel 9 and patrol cars monitored Channel 19; or (2) fixed locations monitored Channel 9 and patrol cars used CB radios with scanning receivers, which could be set to monitor one channel, but automatically switched to Channel 9 upon detection of a signal on the latter channel. The information supplied by respondents did not usually identify the approach used; however, CB radios with scanning receivers have recently become widely available, are preferred for the NEAR program, and are likely to be used in more recent installations. This approach was used, for example, in the Illinois State Police and California Highway Patrol installations of state-funded mobile transceivers.

Four of the 36 state police/state patrol agencies for which information was available monitored only Channel 19, while one agency monitored Channels 19 and 23, and another agency monitored only Channel 23. The use of Channel 23 by the Alabama Highway Patrol (in conjunction with Channel 19) and by the Mississippi Highway Safety Patrol (by itself) is based upon channel 23 being the upper end of the band available to the CB Radio Service (prior to channel expansion on January 1, 1977) and, consequently, minimizing interference from transmissions in the spectrum above Channel 23. (Obviously the creation of 17 new channels will gradually invalidate this logic as CBers purchase and use 40-channel transceivers.) In the case of the AHP, mobile units monitor Channel 19, while fixed installations and volunteers monitor Channel 23.

The vast majority of state police/state patrol agencies used equipment designed to transmit and receive amplitude-modulated (AM), double sideband signals. Of the 41 agencies for which respondents provided information, 37 (or 84 percent of all agencies that responded) used standard AM transceivers. One of these agencies planned to install in its fixed facilities base stations capable of transmitting both AM and single sideband (SSB) signals. Only four agencies (or 9 percent of those that responded) were equipped to transmit both AM and SSB signals. No agencies reported being equipped to operate both in the CB Radio Service and in the General Mobile Radio Service.

7. VOLUNTEER PROGRAMS OPERATED BY STATE POLICE/STATE PATROL AGENCIES

Programs for using resources available from volunteer CBers fall into three categories: (1) agency developed programs specifically tailored to anticipated needs; (2) agreements to work with existing CB organizations; and (3) combinations of both approaches. The programs reported by respondents for state police/state patrol agencies are discussed below.

7.1 AGENCY-DEVELOPED PROGRAMS

Seven state police/state patrol agencies had organized, or were organizing, volunteers to assist with their operations. These volunteer programs displayed a wide variety of operational characteristics:

1. Alabama Department of Public Safety developed the Law Enforcement Citizens' Radio (LECR) Net 23, which recruited individuals who used their own CB equipment to monitor Channel 23 for emergency reports and to report hazardous highway conditions they personally observed. An estimate of 10,000 CBers had joined LECR Net 23.

2. Georgia Department of Public Safety was developing the Radio Users Send Help (RUSH) program. It was a new program, which was intended to recruit individuals to monitor Channel 9. Recruitment was through CB clubs and the news media. A three-to four-hour training program was being developed.

3. Illinois State Police (ISP) was implementing its NEAR program, which was designed to monitor Channel 9 for emergency reports and requests from motorists for assistance (see Chapter IV, Section 2.6) ISP county coordinators were recruiting organized CB teams to perform these functions. A NEAR training program was being developed.

4. Iowa State Patrol implemented the Emergency Assistance Radio System (EARS). EARS recruited individual CBers to monitor Channel 9. The program provided members with identification, but apparently did not have a training program.

5. Louisiana State Police was testing the State Police Assistance Network (SPAN) in Troop E, which was headquartered in Alexandria, in the central area of the state. Individuals were recruited to monitor Channel 9 and to report hazardous conditions they encountered while driving. SPAN is unusual because it performed a background check on prospective members, and refused admission to applicants considered questionable. Applicants accepted as

SPAN members were assigned confidential SPAN numbers, which they used in communicating with authorities. SPAN also monitored the performance of its members; a serious breach of discipline resulted in automatic loss of SPAN membership. Despite these sophisticated measures, SPAN had not developed discipline and had not been expanded to other areas of the state.[1]

6. Michigan State Police developed volunteer programs in some post areas. All details of these programs were determined at the post level, and specific information on them was not available from MSP headquarters.

7. Mississippi Highway Safety Patrol (MHSP) was developing its Law Enforcement Citizens Radio program. The Mississippi LECR recruited CB teams through state and regional CB organizations. Participating teams generally monitored Channel 9. (State personnel in fixed facilities and in vehicles monitored Channel 23.) In addition, LECR members may be used to man MHSP headquarters facilities in major emergencies. Because teams participated in Mississippi LECR, MHSP did not anticipate needing a training program.

In addition to these seven programs, two other state police/state patrol agencies were also considering using volunteers. The Minnesota State Highway Patrol (MSHP) was considering using CBers in natural disasters; the South Dakota Highway Patrol (SDHP) anticipated using them as needed. The MSHP planned to recruit through local CB organizations; the SDHP, through local patrol offices. Neither MSHP nor SDHP had developed specific details on recruiting, training, or using CB volunteers.

7.2 COOPERATIVE AGREEMENTS WITH CB ORGANIZATIONS

In addition to these agency-organized programs, six state police/state patrol agencies (or 14 percent of the agencies surveyed) claimed to have developed formal and informal working relations with CB organizations; four (or 9 percent) planned to develop working relations with CB organizations; and the remaining 33 had neither developed not planned to develop such working relations. Of the six agencies that established ties to CB organizations, two had also

[1] Telephone conversation with Tpr. Charles Miller, Louisiana State Police, November 8, 1977.

developed agency-oriented programs (Michigan State Police, Mississippi Highway Safety Patrol). The other four were the Maryland State Police (MSP), the Nebraska Highway Patrol, Ohio State Highway Patrol, and the Oklahoma Highway Patrol. Only the MSP response suggested the extent of agency involvement with volunteer CB groups. The MSP respondent indicated he had working relations with 12 CB organizations, but a listing of groups returned with the questionnaire indicated more than 100 such groups. Some posts of the Michigan State Police reportedly established working relations with CB groups, but information on these arrangements was not available at agency headquarters. The response from the Ohio State Highway Patrol indicated only that it had working relations with REACT. Though this response was not specific, the long-standing relationship between the Ohio State Highway Patrol and REACT is well known. The remaining three state police/state patrol agencies did not indicate the extent or nature of their arrangements with volunteer CB groups; however, the response from one of these agencies indicated that its contacts were informal.

Two of the four state police/state patrol agencies that planned to develop contacts with volunteer CB groups were also developing agency-oriented programs (Illinois State Police, Louisiana State Police). Responses from the other two agencies planning ties to CB groups (California Highway Patrol, Pennsylvania State Police) were not specific about the intended nature and extent of these ties.

A relatively small number of agencies had or planned to have working relations with volunteer CB organizations. Agencies with ties to CB organizations included 10 of the 44 agencies surveyed (or 23 percent of the agencies for which information was available). Responses from agencies claiming such ties, furthermore, generally lacked specificity, suggesting that most of them had only limited, informal ties to volunteer CB organizations.

8. STATE POLICE/STATE PATROL AGENCY ASSESSMENTS OF CB PROBLEMS

Although a considerable commitment to using CB was noted both in the amount of CB equipment installed and respondent attitudes, only four respondents (or 9 percent of those surveyed) indicated that the CB Radio Service did not require stronger control. Three of these respondents had not experienced problems with CB, and the fourth thought that CB could not be controlled. A total of 32 respondents (or 73 percent of those surveyed) offered the opinion that CB needed to be controlled more tightly. The opinions were based largely on the lack of discipline among CBers. Some respondents mentioned other factors such as channel congestion and the technical characteristics of the CB Radio Service. Nine respondents (or 20 percent of those surveyed did not express an opinion on the need for increasing control over CB (but one of these commented on the impossibility of effecting stronger controls). The most frequently suggested remedial actions included stronger Federal Communications Commission (FCC) enforcement actions and increased FCC efforts to educate the public about good CB operating practices. A number of respondents suggested either delegating enforcement responsibility to state and local government agencies, or giving emergency services agencies control over the use of some channels in emergency situations.

In evaluating the problems of using CB radio to support emergency operations, 28 of 44 state police/state patrol agency respondents indicated that false reports transmitted by CBers were a negligible problem (see Table 6-10.) A total of 11 agency respondents (or 25 percent of all respondents) indicated that erroneous reports caused moderate or severe problems. The respondent for the Kentucky State Police, who considered false reports to cause negligible problems, indicated that good police dispatchers can detect such reports--an attitude commonly expressed by public safety dispatchers who normally interact with the public over the telephone, but rarely expressed about interactions over CB channels. In contrast, the Louisiana State Police respondent, who rated the problem as severe, indicated that his agency required two separate CB reports before it would respond.

Table 6-10. Experience with False Reports to State Police/State Patrol Agencies

Severity of Problems	Number of Agencies Reporting	Percentage
Negligible	28	64
Moderate	4	9
Severe	7	16
Unknown	5	11

n = 44

Convergence of crowds at the scene of an emergency was another relatively commonly experienced problem reported by state police/state patrol agency respondents. A total of 26 respondents reported their agencies had noted that CBers were drawn to emergency locations by information transmitted over CB radios (see Table 6-11a). Of these 26 agencies, respondents for 16 reported that the resultant problems were negligible ones; in contrast, a total of 5 agency respondents (or 19 percent of those reporting problems of CB-caused crowd convergence) indicated that they considered the problems moderate to severe ones (see Table 6-11b). A number of agency respondents expressed the opinion that they had to recognize and plan for the problem. The Maine State Police, in fact, reported using CB to warn CBers to stay away from emergency operations.

Two other types of problems--clearing emergency channels and temporarily stopping the reporting of patrol car locations--had not been encountered by very many state police/state patrol agencies. Only 11 state police/state patrol agency respondents (or 25 percent of all respondents) reported their agencies had tried to clear CB channels for emergency traffic; 31 other respondents (or 70 percent) indicated that their agencies had not made such

Table 6-11. Crowds Attracted to Emergencies by CB as Observed by State Police/State Patrol Agencies

Table 6-11a. Experience

Experienced Crowds	Number of Agencies Reporting	Percentage
Yes	26	59
No	15	34
Unknown	3	7

n = 44

Table 6-11b. Severity of Problems

Severity of Problems	Number of Agencies Reporting	Percentage
Negligible	16	62
Moderate	1	4
Severe	4	15
Unknown	12	16

n = 44

attempts; and two respondents (or 5 percent) did not know whether their agencies had attempted to clear channels. Of the 11 agencies that had tried to get routine traffic off CB channels, respondents for six agencies (or 55 percent) indicated negligible problems, while respondents for five agencies (or 45 percent) indicated moderate or severe problems. The number of respondents who reported efforts to clear CB channels was, unfortunately, small making it difficult to draw conclusions from their experiences. Again, interesting contrasts were noted. The respondent for the Alabama Department of Public Safety, who rated the problem as severe, attributed his agency's difficulties to claims of squatters' rights by individuals hostile to law enforcement agencies. The Arizona Highway Patrol respondent, who rated the problems as negligible, commented that the greatest difficulties came from people, unaware of the emergency, who arrived in the area and attempted to use a previously cleared channel.

Respondents from 21 agencies (or 27 percent of those surveyed) indicated that they knew of attempts by their agencies to stop CBers temporarily from transmitting the locations of patrol cars (known as Smokey blackouts); 31 respondents

(70 percent) indicated their agencies had not attempted to impose Smokey blackouts; and one respondent did not know whether his agency had made such an attempt. Among those respondents whose agencies had instituted Smokey blackouts, 10 (or 83 percent) felt the problems encountered were negligible, and the other two (or 17 percent) felt the problems were moderate or severe. As was the case with efforts to clear CB channels for emergency traffic, the relatively small number of agencies that attempted to institute Smokey blackouts makes it difficult to extrapolate their experiences to other situations. Many of the respondents who indicated no experience, furthermore, stated their agencies had policies against such efforts. The very approach, moreover, has come into question, since current agency experience has tended to minimize the accuracy of Smokey reports and has discounted the value of efforts to suppress them.

9. ATTITUDES OF STATE POLICE/STATE PATROL AGENCIES TOWARD ALTERNATIVE CB PROPOSALS

A series of questions about organizing the CB Radio Service for use in emergency operations brought generally unfavorable responses from state police/state patrol agency respondents. These responses are summarized in Table 6-12.

A question about the desirability of increasing the number of channels available to the CB Radio Service was opposed by respondents from 26 of 44 agencies. Another question on the need to create a new service (such as that proposed for spectrum in the 220 MHz region), brought negative responses from 23 of 44 respondents and positive ones from only nine respondents. Those who advocated the new service saw it primarily as solving the technical problems of the CB Radio Service. Those respondents opposing the new service generally felt that the CB Radio Service was adequate for their needs and that the new service would be too expensive to achieve a widespread distribution of equipment.

A proposal to create a CB capability similar to the Radio Amateur Civil Emergency Service (RACES) brought negative responses from 23 respondents. Those opposing creation of such a CB capability generally augued that CBers

Table 6-12. Responses of State Police/State Patrol Agencies to Alternative CB Proposals

Proposal	Agree Number of Agencies	Agree Percentage	Disagree Number of Agencies	Disagree Percentage	No Opinion Number of Agencies	No Opinion Percentage
Need to Increase CB Channels	8	18	26	59	10	23
Need to Create New Service*	9	20	23	52	12	27
Need for RACES-Like Capabilities	11	25	18	41	15	34
Need to Develop Support Organizations	14	32	16	36	14	32

n = 44
*Percentages do not add to 100 because of rounding

lacked discipline or that the necessary capabilities already existed in established CB organizations. Respondents favoring the creation of such a capability and who stated opinions, felt that such a capability would impose discipline on CBers. In general, however, the respondents appeared to have little grasp of RACES operations.

Finally, a question about developing civil preparedness support organizations to further the emergency use of CB was endorsed by respondents from 16 agencies and opposed by respondents from 14 agencies; 14 respondents did not express opinions. In general, as was the case with state and local civil preparedness agencies, respondents generally viewed the proposed organizations as operational; however, the questionnaire tried to express the concept of organizations with information-exchange functions that would not operate during actual emergencies. The faulty interpretation of the question generally throws the responses into question.

10. CB USE BY OTHER STATE-LEVEL AGENCIES

State agencies other than state police/state patrol agencies and state civil preparedness agencies were in the process of adopting CB equipment. A partial list of agencies using CB radio was assembled from state police/state patrol agency and state civil preparedness agency questionnaire responses, as well as from current literature. The list is presented in Table 6-13. In addition, state police-state patrol respondents indicated that agencies in South Carolina, Tennessee, and Washington were also using CB, but failed to identify the specific agencies or uses. Subsequest effort did not produce any additional information for these three states.

In general, adoption of CB was occurring in those agencies that (1) dealt with the motoring public, or (2) had law enforcement functions. Table 6-13 shows that at least eight state agencies with responsibilities for enforcing fish and game laws were making some use of CB. These agencies used CB to aid hunters, fishermen, and other recreationists; to receive reports of fish and game violations from members of the public; and to monitor attempts to coordinate poaching efforts through CB radio. The table also shows that agencies responsible for highway operations and maintenance in at least seven states were also using CB to provide assistance to motorists and to receive information on hazardous conditions.

Other uses appeared more sporadically. The California Department of Forestry was receiving reports of wildland fire starts from organized volunteer fire spotters, and was considering broadening its use of CB. Illinois, New Mexico, and South Dakota agencies responsible for licensing motor carriers and for enforcing weight limits and other restrictions were using CB in their enforcement efforts. The West Virginia Department of Commerce had developed a CB network to provide information to tourists in the state.

Reported levels of use were highly variable. The Wyoming Department of Game and Fish was funded by the state, and all wardens were equipped with 40-channel transceivers.[1] Installations in Illinois were accomplished under the NEAR

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[1] "New Equipment Aid in Law Enforcement: S9 CB Newswire," CB Radio/S9, Vol. 18, No. 3, March 1978, p. 9.

Table 6-13. State Agencies Using CB

State	Functions: Fish and Game	Highways	Other
California	X		Forestry
Illinois	X		Secretary of State
Iowa		X	
Georgia		X	
Louisiana	X		
Maryland		X	
Minnesota		X	Parks
Mississippi	X		
New Mexico		X	Motor Transportation; Emergency Medical Services
New York		X	
North Dakota	X		
South Dakota	X		Attorney General
Vermont	X		
West Virginia		X	Commerce (Tourism)
Wyoming	X		

program (see Chapter IV, Section 2.6). The West Virginia tourism network involved businesses serving tourists, chambers of commerce, and volunteers. In most other cases, installations involved staff members' own equipment. It is possible, however, to anticipate future expansions parallelling the course of CB use by state police/state patrol agencies in which state-furnished CB equipment will eventually supplement or even replace employee-furnished equipment.

Overall, the observed uses of CB equipment by state police and state highway patrol agencies has become so extensive--and is growing so rapidly--that it is unlikely CB will cease to be an important component of law enforcement and highway traffic safety operations. Other agencies also seem to be following the lead of the law enforcement and traffic safety agencies. The availability of CB radio through state-level agencies, especially those concerned with vehicular travel, potentially provides civil preparedness agencies with new and powerful means of reaching the public in emergencies including crisis relocation situations.

CHAPTER VII

CAPABILITIES OF VOLUNTEER CB ORGANIZATIONS TO PERFORM EMERGENCY SERVICES

Volunteer organizations operating in the CB Radio Service are of considerable potential interest to civil preparedness authorities. While relatively few CBers belong to volunteer CB organizations, these organizations provide the most effective means of reaching some of the most responsible and experienced CBers. At federal and state levels, national CB organizations provide the means by which DCPA and state civil preparedness agencies can implement overall plans for organizing and using CB volunteers and CB equipment in emergencies. At county and city levels, local components of national CB organizations, as well as purely local CB organizations, are prime sources of both personnel and equipment for civil preparedness agencies to use in emergencies.

This chapter contains brief reviews of two disasters in which CB volunteers participated--the tornado that struck Omaha, Nebraska, on May 6, 1976; and the flash flood that struck Big Thompson Canyon near Loveland, Colorado, July 31, 1976. These reviews are designed to illustrate significant factors to be considered in using CB volunteers in a nuclear attack or in other, nonwar emergencies. The factors are stated as inputs to possible future DCPA guidance on the emergency use of CB. They are also included in a draft Civil Preparedness Circular on CB, which appears in Appendix B.

The chapter also includes a discussion of the characteristics of volunteer CB organizations and programs, emphasizing those that must be considered in identifying organizations suitable to participate in future DCPA programs. (Note that Chapter VIII includes the findings of a survey of CB teams organized by REACT International, Inc., and by the ALERT Section of the American Citizens Band Operators Association, Inc. The information in Chapter VIII supplements material presented in this chapter.)

Finally, Chapter VII concludes with a discussion of the potential role of truck stops in using CB during emergency situations, especially those involving the relocation of large numbers of people from risk areas to host areas during a period of international crisis. While truck stops are commercial operations, they have some interesting capabilities for communicating with members of the

general public as well as with participants in volunteer CB organizations. These roles would almost certainly be performed--short of takeover by the federal government in a national emergency--on a voluntary basis.

1. VOLUNTEER PARTICIPATION IN DISASTERS

The two disasters reviewed during preparation of this report differ primarily in two critical respects--extent of advanced preparation, and consequent effectiveness of emergency operations. The emphasis in the following discussions is on the use of CB to support emergency operations.

The response to the Omaha tornado was characterized by effective advanced planning as well as by activation of the plan well in advance of the onset of the actual storm. The use of CB volunteers was part of both the advanced plan and the anticipatory response. Civil preparedness actions in the Big Thompson Canyon flood did not include such detailed advanced planning, and the need for a concerted emergency response to the rainstorm that triggered the flood was not recognized until well into the storm. Planning for the use of volunteer CBers had not occurred, and they proved to be a mixed blessing.

1.1 OMAHA TORNADO[1]

The Omaha tornado occurred in an area periodically impacted by tornadoes. The tornado threat had created a high level of public awareness. Advanced preparations included:

- Arrangements with local news media to disseminate background information on tornado protective responses
- Arrangements among the Douglas County-Omaha Civil Defense Agency, the Omaha Weather Service Forecast Office of the National Weather Service, and local broadcast stations for the prompt dissemination of tornado watches and warnings
- In-place sirens covering 90 percent of Omaha's population, and tone-actuated warning receivers in schools, businesses, and industrial plants

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[1] Material in this section was developed from National Weather Service, The Omaha Tornado, May 6, 1975, n.d., and "Tornado," CB Magazine, February 1977, pp.30-32, 94.

- Assignment of responsibilities to the Douglas County REACT Team and local amateur radio operators to perform as tornado spotters in the National Weather Service SKYWARN program

In addition, the entire mechanism was exercised about six weeks earlier by a small tornado, which did no damage, but which put the whole system into operation.

The day of the tornado, the National Weather Service activated the system by declaring a tornado watch. Radio and television stations broadcast information about the watch for several hours. A report from the Douglas County REACT Team signalled the initial impact of the tornado. The National Weather Service then issued a tornado warning, which was broadcast by radio and television stations.

Advanced preparation, an early declaration of a tornado watch, and a prompt warning reduced loss of life to three deaths and about 200 tornado injuries, most of them minor ones. The potential for death and injury was, however, much higher, since over 2,000 homes and apartments were destroyed; an elementary school was destroyed, and a junior high school, extensively damaged; part of a local hospital was also destroyed; and extensive damage was done to many businesses.

After the impact of the tornado, Douglas County REACT Team members provided field reports on the damage and relayed requests for assistance. They also assisted police in limiting public access to damaged areas, a function they continued to perform after the Nebraska National Guard assumed responsibility for perimeter control. Finally, in the absence of telephone service, REACT team members and unaffiliated CB volunteers in their vehicles handled health and welfare traffic. Authorities recieved queries about the whereabouts and well being of individuals and families and passed them to CB-equipped mobile units in the appropriate neighborhoods; the mobile units located the parties in question and reported back. Long-haul health and welfare traffic was handled through Red Cross, Civil Air Patrol, and amateur radio communications. The postdisaster role of the Douglas County REACT Team had not been planned

in advance and had to be improvised. The improvization was largely successful, probably because of other planning efforts and operational experience.

A postdisaster critique by the Douglas County REACT Team and other organizations indicated that procedures had to be instituted to seek the release of more volunteers from work during an emergency period. Excessive electrical interference from the approaching tornado impeded good radio communications among CBers; goals were established to acquire equipment transmitting single sideband (SSB) signals to obtain better noise rejection. Joint use of the same working channel by REACT and a local CB group--Citizens Band Communicators--eased coordination between the two groups, but caused some interference between them. A decision was made to separate the networks; designated base stations would monitor both networks and pass information between them. In addition, detailed plans were developed for reporting damage assessment information after a tornado had touched down. These plans included provisions for bypassing the 911 systems which was likely to become overloaded. Detailed plans were also developed for handling health and welfare traffic following a disaster.

1.2 BIG THOMPSON CANYON FLOOD[1]

The flood occurred in a recreation area primarily consisting of summer homes, motels, and resorts. The affected population included about 600 permanent residents, about 1,200 summer residents, and about 700 transients. The area was not considered disaster-prone; authorities did not recognize the severity of flood threat in advance. When they did, communications for reaching the

[1]Material in this section was developed from a telephone conversation with Sheriff Robert Watson, Larimer County, Ft. Collins, Colorado, February 17, 1978; and from personal meetings with Sgt. Patrick McCosh, Communications Officer, Larimer County Sheriff's Office, Ft. Collins, September 15, 1977, Lt. Marvin C. Schlageter, Supervisor, Larimer County Troop, Colorado State Patrol, Ft. Collins, September 15, 1977; and H.J. Peterson, Regional Field Specialist, and John Lukins, Planner, DCPA Region Six, Denver, Colorado, November 3, 1977. Additional information was obtained from E. G. Gruntfest, What People Did during the Big Thompson Flood, Institute of Behavioral Science, University of Colorado, Working Paper 32, August 1977.

people threatened by it were limited. For example, public safety communications are limited by a blind spot in the narrowest area of the canyon. Lacking experience with the flood hazard in Big Thompson Canyon, furthermore, many people attempted to leave instead of seeking high ground. The flood killed at least 136 people and destroyed many homes and recreational establishments.

CB appears to have played some role in passing information among people isolated in the canyon during the period of flooding. In addition, people in the canyon used CB to coordinate their own rescue efforts and to pass damage assessments and requests for assistance to those providing outside relief. These efforts were unplanned, of course, but are generally regarded as having been successful. In fact, the governor of Colorado presented a citation to a resident of Estes Park for her handling of emergency CB traffic.

After the flood subsided, outside search and rescue efforts began, followed by efforts to provide short-term relief for flood victims. Some major communications problems occurred. For example, personnel from the Larimer County Sheriff's Office could not communicate directly by radio with personnel from the Colorado State Patrol because they did not share a common frequency. Disaster operations brought in many CB-equipment volunteers. It appears that some of these volunteers came in organized groups, while others came as unaffiliated individuals. It also appears that volunteers came both as CBers (to provide communications), and in other roles (for example, as 4-wheel-drive clubs), but brought CB radios with them. Since the effort to use CB in the emergency operations was not preplanned, however, it has been impossible to determine reliably the numbers and identities of volunteers.

Preliminary investigation indicated a large number of "horror stories" about problems caused by CBers. Attempts to trace these stories to their sources generally resulted in far different accounts of situations than the original hearsay versions. For example, a story was encountered repeatedly that CBers had installed an unauthorized roadblock and had stopped a ranking Colorado State Patrol (CSP) officer--usually identified in the story as the captain in charge of the operation. Queries located the offices involved. In actuality,

the roadblock was probably authorized to divert traffic temporarily around a congested intersection near the Loveland field command post for flood operations. Its inception was not recorded by command post personnel. The roadblock was monitored, however, by CSP personnel. It was maintained effectively overnight by a succession of CB volunteers, who passed instructions orally. Only when a CSP lieutenant had contact with roadblock personnel did he determine that the roadblock had outlasted its usefulness by many hours. In this particular case, authorities did not provide adequate supervision of volunteers; and the volunteers were not sufficiently aware of operational procedures to realize that their services could be better used elsewhere. Most other stories of problems caused by CBers were also traced to their origins and proved to have resulted from similar failures to communicate.

Only one major failure was verified. A CBer transmitted several warnings about the rupture of an upstream dam and a consequent second flood. These reports reached the news media and required authorities to confirm the integrity of the dam. The false reports were apparently transmitted maliciously, probably by a single individual. These reports led the officer in charge of disaster operations to call CBers together and to order their operations suspended, which resulted in subsequent CB activities being limited to very localized support efforts, mostly in the Estes Park area.

Informal review of emergency operations during the Big Thompson Canyon flood convinced major state and local emergency services participants that CBers and their equipment had value in disaster situations. It was decided, furthermore, that use of the CB Radio Service had to be organized in order to stimulate effective support and to inhibit inappropriate actions. To date, however, no effort has been made to implement such organized CB support.

1.3 FACTORS TO BE INCLUDED IN DCPA GUIDANCE FOR VOLUNTEERS IN EMERGENCY OPERATIONS

The two specific examples discussed above of using CBers to support emergency operations do not provide a rigorous base for all such uses. They illustrate many of the factors, however, that must be incorporated into DCPA emergency preparedness guidance and carried over into local efforts to use CB, if CBers are to participate effectively in emergency operations. These factors include:

1. Advanced Planning. The probability of successful emergency operations involving CB (and all other emergency resources, both volunteer and professional) is markedly increased if plans for these operations are prepared in advance. Plans should define tasks appropriate for CBers and their equipment. They should also define their relationships to other volunteers (such as radio amateurs) and to professional components. Since some of the benefits of emergency operations plans accrue from the process of planning (and since the problems of using CBers and other volunteers differ from those involved in using professional emergency services personnel), it is important that key CBers be identified prior to development of plans and that they be involved in the planning process. Plans should provide for all phases of emergencies from crisis buildup (when advanced notice is available) through onset to recovery and demobilization. The Omaha tornado plan for using CB failed to provide for postwarning operations, but the strength of planning for earlier operational phases carried over into phases of emergency operations for which planning had not been accomplished.

2. Adoption or Development of Volunteer CB Component. Once the appropriate CBers have been identified, it is necessary to incorporate them into civil preparedness forces. This can be done by adopting existing organizations as was done with the Douglas County REACT Team and the Citizens Band Communicators by the Douglas County-Omaha Civil Defense Agency. While it is sometimes possible to merge such volunteer organizations into civil preparedness agencies, it appears preferable to maintain the separate identities of preexisting CB organizations, since these identities have often been developed over extended periods and are of real value in maintaining strong, disciplined volunteer organizations. Where suitable CB organizations do not already exist, it is necessary to develop them by recruiting key leaders and letting them recruit additional members. To minimize

the possibility of vigilantism and other counterproductive behavior, it is desirable to recruit members as broadly as possible, avoiding building an organization out of a small clique. Even when new CB organizations are developed, it may be desirable, both administratively and operationally, to allow them some degree of separation from the parent civil preparedness agencies.

3. Training. In order to assure that CBers (and other emergency personnel) are adequately prepared to carry out planned functions, it is essential that they be trained in their assignments. Whenever possible, training should involve both CBers (and other volunteers) and emergency services professionals. This joint training increases mutual understanding of roles and capabilities. Efforts should be made to use simulation exercises to give realistic field experience to volunteer and nonvolunteer emergency services components.

4. Operational Experience. Since a plan prepared and put on the shelf, and training completed but unused, are both soon forgotten, it is important that any plan for using CBers in emergency operations provide them with ongoing activities. This is particularly true for areas with limited disaster hazards and for nuclear attack plans. Operational activities should involve routine low-stress functions to strengthen organizational ties and build discipline by weeding out those who cannot (or will not) perform according to agency rules. The typical Channel 9 monitoring activities, coupled with support of public functions such as parades and fairs, provide suitable day-to-day tasks. These activities should also include activities in more stressful emergencies as they arise. Activities in large fires or accidents provide these more advanced types of experiences. The Douglas County REACT Team's role in tornado watches also appears to be representative of these higher stress functions. To the extent possible, these various activities should be in conjunction with public safety and other emergency service agencies to cement smooth working relationships between volunteers and professionals.

5. Instructions and Supervision. In order to avoid the kind of problems that arose among volunteer CBers in the Big Thompson Canyon flood, it is essential that CBers (and all other volunteers) be provided with adequate instructions and appropriate supervision. To some extent, mutual familiarity between volunteers and professionals will reduce misunderstandings among them, but it is always necessary to assure that volunteers are assigned tasks they can perform

> effectively. Those not being used should be released and sent away from the scene of the emergency so that they do not interfere with emergency operations. Volunteers should understand their assignments so they recognize and report changing circumstances potentially warranting new assignments for themselves (and possibly for other emergency forces). Since unaffiliated CBers may be pressed into service with established volunteer groups, and since volunteers should not be given (or allowed to usurp) enforcement authority, they should be under official supervision.

A decision not to use CB volunteers either in a particular emergency or in all emergencies does not obviate the need for preparation. Volunteers simply showed up after both the Omaha tornado and the Big Thompson Canyon flood. The large number of CBers and the wide availability of CB equipment, especially in vehicles, virtually assures that CB must be dealt within any large-scale emergency. (The problem of CB-stimulated crowd convergence is discussed briefly in Chapter V, Section 3.8, and in Chapter VI, Section 8.) Excluding CB operators from any (or even all) emergency operations is probably feasible, but cannot be accomplished by simply disregarding them. In those instances in which CB support is not necessary or appropriate, positive actions must be taken to assure that unauthorized (and even malicious) activities do not occur. These actions probably include both excluding unauthorized persons who own CB equipment from the emergency area and monitoring CB channels to determine what kinds of information (and misinformation) are being disseminated.

1.4 RELATIONSHIPS AMONG CB VOLUNTEERS AND AMATEUR RADIO VOLUNTEERS

There has been long-standing animosity between CBers and radio amateurs, which goes back to the reassignment of 27 MHz frequencies from the Amateur Radio Service to create Class D of the Citizens Radio Service, now the CB Radio Service. This animosity is of little concern to DCPA, except where it impedes emergency operations by interfering with the cooperative use of both the CB Radio Service and the Amateur Radio Service.

This animosity now seems, appropriately, to be diminishing. While radio amateurs frequently remark that CBers lack discipline, many radio amateurs have acquired CB equipment and are using it to supplement their amateur radio equipment. More significantly, the Amateur Radio Service is currently experiencing strong growth. New licensees in the Amateur Radio Service seem to be drawn from the ranks of CBers (see Chapter III, Section 3.2). These new radio amateurs tend to promote cooperations between the two classes of licensees. This is especially true with regard to responsible CBers who comprise REACT and other public service CB organizations.

With the noisy squabbles between CBers and radio amateurs diminishing, it is now feasible to devote attention to using both in effective emergency communications operations. Plans for the joint use of the CB and Amateur Radio Services should recognize the capabilities and limitations of both services. Specifically, the CB Radio Service should be used in short-range applications in which large numbers of transceivers, particularly mobile units, are desirable. These applications include such functions as:

1. Collecting threat and damage assessment information
2. Substituting for the telephone during outages, including collecting and disseminating health and welfare messages
3. Supporting operations among emergency services, military support units, public utilities, and other agencies not requiring extensive communications, but usually lacking compatible frequencies, precluding any communications at all. (These types of operations include traffic control, perimeter security, and restoration of utilities.)
4. Disseminating information to and receiving information from members of the public in CB-equipped vehicles

The Amateur Radio Service should be used in circumstances that make desirable smaller numbers of transceivers with reliable, low-noise, short-range characteristics or with long-range characteristics. These applications include:

1. Providing command networks among critical emergency locations
2. Connecting local health and welfare networks into long-haul facilities
3. Providing channels between a disaster site and support locations, or between cities

In the following discussion, references to the Amateur Radio Service should be understood to include the Radio Amateur Civil Emergency Service (RACES), where the latter is applicable. Because of recent changes in the Federal Communications Commission (FCC) Rules and Regulations governing RACES, its utility has been severely limited in peacetime situations. (The problems involved in using RACES as currently constituted are discussed in Appendix A.)

Several models exist for such cooperative efforts. For example, the Dallas, Texas, and Palo Alto, California, Community Radio Watch (CRW) programs were both organized by local police departments.[1] (The Community Radio Watch program is discussed in Section 3.4 of this chapter.) They have organized CBers, radio amateurs, and radio-equipped businesses to report crime, traffic, fire, and medical emergencies to the appropriate agencies. In addition, radio amateurs in the Dallas CRW have been recruited into the National Weather Service SKYWARN program. In general, however, both the Dallas and Palo Alto CRW programs are limited to the collection and forwarding of emergency reports.

The Dallas CRW program is supervised by a 10-member Community Radio Watch Council created in 1969 by action of the Dallas City Council. Dallas City Council action was used to give the CRW Council prestige within and outside the organizations involved. The CRW Council coordinates the activities of the individual organizations, all of which retain their own identities, structures,

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[1] R.W. Coker, CRW Coordinator, Communications Division, Dallas Police Department, letter to Murray Rosenthal, subject: Dallas Community Radio Watch Program, November 1, 1977; and Stephen Barry, Crime Prevention Unit, Palo Alto Police Department, letter to Murray Rosenthal, subject: Palo Alto Community Radio Watch Program, December 5, 1977, with attachment "City of Palo Alto Community Radio Watch Program."

and functions. The Palo Alto CRW is coordinated by a smaller, less formally structured Police Department committee. The Palo Alto CRW consists of individual members rather than organizational members. Both the Dallas CRW Council and the Palo Alto coordinating committee oversee the dissemination of information about CRW accomplishments through the news media. The good publicity tends to reinforce program effectiveness.

The Dallas and Palo Alto CRW programs have been highly successful, and have been used as models for CRW programs throughout the country. The Palo Alto program is currently being expanded to cover all of Santa Clara County. While the CRW program is, typically, limited to the rather passive reporting of emergency situations, it can be expanded to cover other more active emergency situations. To do so requires that the roles of and functional relationships among participating CB, radio amateur, and business organizations be defined more precisely than is necessary in conventional CRW programs. Such expansion could, nevertheless, benefit from having the ongoing function of reporting emergency incidents to keep the participating organizations routinely occupied.

Other models for joint amateur radio-CB operations are also available. In the Santa Barbara, California, area, for example, radio amateurs, CBers, 4-wheel drive clubs, and the Civil Air Patrol (CAP) have developed the Council of Affiliated Volunteer Emergency Radio Teams (AVERT).[1] It is a loose coalition of communications and allied groups, organized specifically for providing emergency services in a natural disaster or a nuclear attack. AVERT had disaster experience in the 1977 Sycamore Canyon fire, but its organizers had not completed their planning efforts prior to the fire. AVERT differs from the CRW model in that it does not have any day-to-day functions. Almost all of its components, however, do have separate responsibilities, which range from daily monitoring of Channel 9 by the Santa Barbara REACT Team to occasional emergency actions by virtually all other participating groups.

In attempting to integrate the capabilities of the CB Radio Service and the

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[1] Council of Affiliated Volunteer Emergency Radio Teams, AVERT Operating Manual, n.d. [1978].

Amateur Radio Service, using a confederation approach is preferable to approaches either creating separate CB and amateur radio organizations or creating a single organization. Two separate organizations tend not to come to grips with the problems of working together, and tend to experience problems when called on to work together in a particular emergency. A single organization tends to require a heirarchical structure, which places someone in charge, creating potentially serious status problems. For these reasons, it appears preferable to expand the CRW confederation model to cover larger-scale emergencies and nuclear attack situations.

2. TYPES OF VOLUNTEER CB ORGANIZATIONS

There are several thousand organizations concerned directly or indirectly with the CB Radio Service presently in operation. (No precise estimate of the number of organizations exists, but the absence of this information is not a serious problem.) Some of these CB organizations are national in scope and have state and local affiliates. Many CB organizations are purely local associations of people sharing mutual interests. Some of the national organizations have small professional staffs as to do a few of their state and local affiliates; a very few of the purely local organizations may also have professional support. The vast majority of the effort behind all CB organizations is, however, voluntary.

Volunteer CB organizations can be divided into service organizations and recreational ones. The service organizations are primarily interested in using CB to perform public service functions; the recreational organizations are primarily interested in expanding common interests in CB into a broader range of basically social activities. Many of the socially oriented CB organizations are content to communicate over their radios and to meet, periodically, in person. Some of these meetings are informal, so-called breaks for morning coffee and doughnuts; others are more formally structured evening or weekend meetings. Some CB organizations sponsor jamborees, which bring together hundreds or even thousands of CBers, including both unaffiliated ones and

members of a number of CB clubs. Socially oriented CB organizations often sponsor other activities of mutual interest. Many of these, such as campouts (for recreational vehicle owners) and off-road expeditions (for 4-wheel-drive vehicle owners) offer opportunities to use CB communications, but others (such as dances and bowling tournaments) simply expand CB-originated social contacts.

The separation of public service and recreational objectives is far from absolute, however, and many CB organizations either combine both interests or shift between them as their memberships and external circumstances change. In fact, one of the characteristics of CB service organizations--which they share with amateur radio service organizations--is the extent to which service creates a sense of social involvement with (and even stimulates recreational activities with) other service-oriented CBers. The characteristic of satisfying both public service objectives and supporting social (and even recreational needs) is, in fact, one of the attributes of CB (and amateur radio) that leads to strong, internally disciplined volunteer organizations. It has already lead to many years of excellent support of a number of state and local civil preparedness organizations by radio amateurs. It can, if property nurtured, lead to similar support of state and especially local civil preparedness organizations by CBers.

CB organizations can also be divided into a number of categories other than service and recreational. There are CB organizations that are primarily operational. There are also CB organizations primarily concerned with the exchange of information. Among the former are CB organizations such as REACT and ALERT, which perform public service functions; among the latter, CB organizations exchanging information on these functions as well as on related problems such as FCC Rules and Regulations and means of coping with the problems created by nonaffiliated CBers.

CB organizations can also be characterized by whether their use of the CB Radio Service is a primary interest or a supportive one. Those organizations that are set up to take emergency reports and requests for assistance received over CB channels are examples of organizations whose primary concern is with CB.

Those organizations such as search and rescue organizations and ski patrol organizations, which use CB as an adjunct to performing their activities, are examples of organizations whose use of CB is supportive of other, primary, activities.

3. VOLUNTEER CB ORGANIZATIONS OF POTENTIAL INTEREST TO DCPA

Give the wide diversity of CB organizations, it appears appropriate for DCPA to place its emphasis upon a few national organizations whose primary concerns are with direct public service uses of CB. This approach eliminates primarily recreational organizations, which generally lack experience with the problems involved in using CB to accomplish specific emergency-oriented objectives. It also eliminates service organizations using CB for support, but many of them (such as search and rescue organizations) may be separately involved in civil preparedness operations through their primary activities.

3.1 GENERAL CONSIDERATIONS

Ideally, DCPA should be able to work through national CB organizations with adequate administrative capabilities, thereby increasing the efficiency with which CB volunteers can be incorporated into civil preparedness programs. These organizations should have recruited interested volunteers and filtered out those whose interests are only casual. These organizations should have already performed such essential functions as building management structures, developing newsletters, preparing mailing lists, and perhaps even implementing training and other support programs. The national organizations should also have developed state-level components to facilitate interaction with state civil preparedness organizations. Finally, they should have developed a high degree of discipline within their local components as well as some standardization from one local unit to another. While all volunteer CB organizations vary to some extent from the ideal, the major ones do provide an adequate base for DCPA involvement in applying CB to civil preparedness operations.

Only REACT and ALERT provide suitable bases for potential DCPA-sponsored programs

to use the CB Radio Service in emergency operations. REACT and ALERT are operational CB organizations primarily functioning to monitor Channel 9 for emergency calls and requests from motorists for assistance. These organizations are discussed in greater detail later in this chapter (see Sections 3.2 and 3.3).

In addition, the Community Radio Watch is also of potential interest to DCPA. CRW is a program rather than an organization. It has the potential, nevertheless, of assisting DCPA in developing CB programs. CRW is discussed later in this chapter (see Section 3.4).

Finally, the U.S. Citizen Radio Council (USCRC) is an alliance of state CB councils organized to exchange information on CB-related problems and to press for improvement in the CB Radio Service. While it is not a public service organization per se, it is concerned with establishing conditions under which public service organizations can operate effectively. USCRC is also discussed later in this chapter (see Section 3.5).

Specifically excluded from further discussion are:

1. International CB Radio Operators Association (CBA)
2. CB Radio Posse

CBA has had plans for the development of programs to eliminate CB interference, disseminate information on CB to CBers, and educate CBers and non-CBers on the correct use of the CB Radio Service. CBA has apparently run into financial difficulty, however, which have interferred with implementing its plans.

The CB Radio Posse was recently labelled as a "gimmick," by the International Association of Chiefs of Police.[1] It apparently provides limited benefits in return for its membership fees, while selling badges, auto emblems, and other equipment, which could be used in vigilante operations.

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[1] "Radio Posse Called a Gimmick; Good Buddies Tune in a Rip-Off," Los Angeles Times, December 9, 1977, pt. I-A, p.7; and "CB Posse Card Gimmick Makes Smokey Uneasy: CB Newswire, "CB Radio/S9, Vol. 18, No. 3, March 1978, p.18.

Also excluded from further discussions are Diesel Control, Diesel Drivers International Inc., I-80 Control CB Club, and I-90 Control CB Club. All of these organizations are designed primarily to provide assistance to long-haul truckers (and, secondarily, to other highway users). In addition, they are not truly national organizations (especially the I-80 and I-90 Control CB Clubs). Finally, the Highway Emergency Locator Program (HELP), which was initially created by the Automobile Manufacturers Association, has also been excluded from further consideration. HELP may have some surviving organizations around the country, but appears to have been dropped as a program by the organization that developed it.

It must be emphasized that many purely local CB organizations exist, which are capable of providing excellent support to county and city civil preparedness agencies. From the standpoint of establishing a federal program, it is impossible to deal with local organizations. It is only feasible to establish national guidance which may be realized in some areas using local resources.

3.2 REACT

REACT, which stands for Radio Emergency Associated Citizens Teams, was established in 1962 under the sponsorship of Halicrafters Radio Company, Inc. Sponsorship was assumed, in 1969, by General Motors Corporation, through the General Motors Research Laboratories. In 1975, REACT was reorganized as an independent, non-profit, tax-exempt public service organization. It still receives major grant support from General Motors. REACT played a major role in convincing the FCC to reserve Channel 9 for emergency and routine requests for assistance. REACT also has an agreement in force with the American National Red Cross under which it provides emergency communications support in disasters.[1]

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[1] American National Red Cross, Statement of Understanding between REACT International, Inc. and the American National Red Cross, ARC 2240, 1976.

REACT is headquartered in Chicago, Illinois. REACT policy is set by an appointive Board of Directors. A member of the American National Red Cross Disaster Services staff sits on the Board of Directors. REACT maintains a small professional and clerical staff.[1] The staff has grown in the past several years. Staff workload has also grown as a result of the growing public interest in CB, the rapid increase in REACT teams, and increasing involvement in the National Highway Traffic Safety Administration (NHTSA) National Emergency Action Radio (NEAR) program. (The NEAR program is described in Chapter III, Section 2.) Some complaints have been made by members about a net decrease in service. Efforts are in progress, however, to resolve these problems.

REACT's basic organizational component is the local team. To be chartered, teams must include at least five members. Memberships are not accepted from individuals except through teams. Teams must strive to monitor Channel 9 24 hours per day, seven days per week. Many, but not all, teams achieve the goal of full-time operations.

As of December 1978, REACT had chartered approximately 1,800 teams. (Figure 7-1 shows the distribution REACT teams by state. It also shows the locations of team councils.) This represents an increase of about 300 teams during 1977--a reflection of the overall boom in the sale and use of CB equipment. Teams are semiautonomous; many of them are separately incorporated entities. REACT has tended to charter teams as people were available to form them. Consequently, many locations--especially metropolitan areas--are served by two or more teams, while other locations--especially rural areas--are not served by any teams. REACT personnel estimate that its 1,800 teams cover only 10 percent of the nation's area.[2] In some instances, furthermore, teams in the same general area have feuded with each for primacy; in others, overlapping

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[1] According to a report given by Gerald Reese, Managing Director, to the 2nd Annual International REACT Convention in Irving, Texas, August 12, 1977, the staff then consisted of five full-time persons.

[2] "REACT Gives Emergency Aid Through CB Radio," Los Angeles Times, December 26, 1977, pt. I-A, p. 7.

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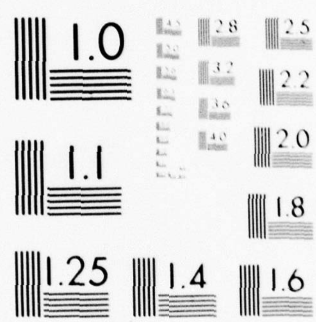

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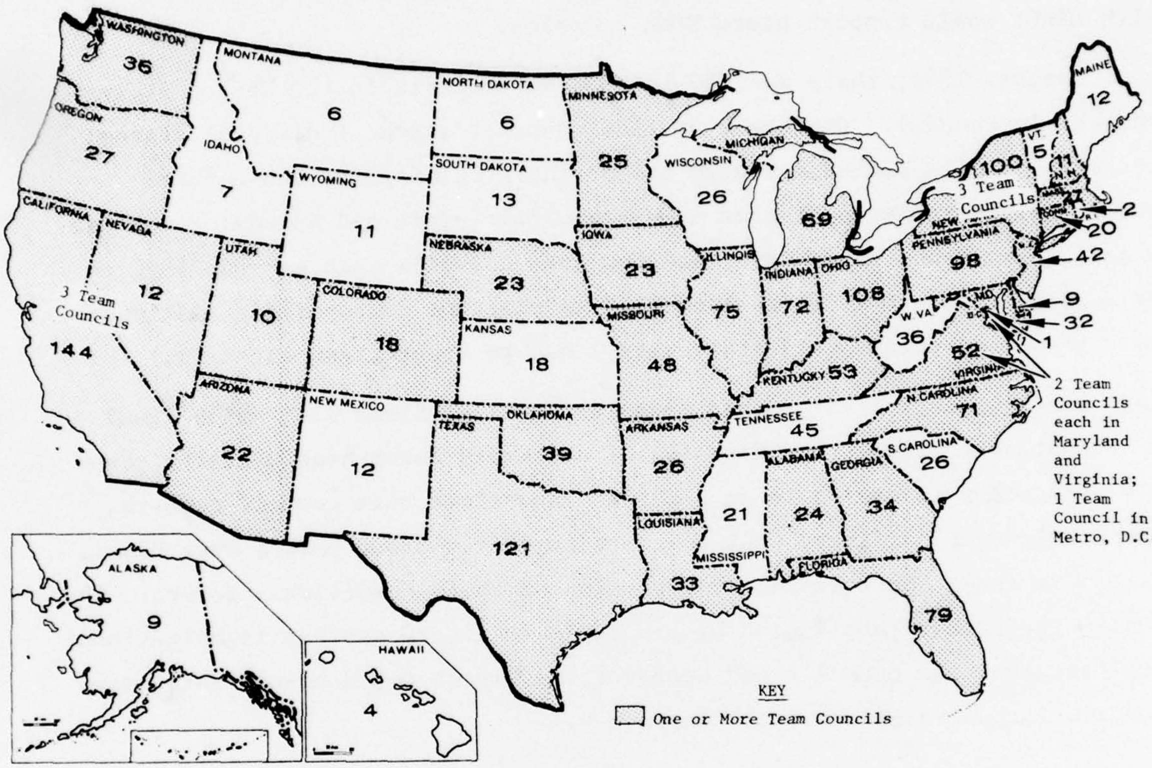

Figure 7-1. Distribution of REACT Teams and
Team Councils

teams have effectively divided responsibility among themselves. REACT has recently made a concerted effort to fill gaps in coverage and to resolve problems among teams. The NEAR program, furthermore, appears likely to reinforce the need for smooth internal operations, since police agencies prefer to operate with organizations whose areas of responsibility are clearly defined.

Because of the rapid growth of its teams, REACT has been creating team councils as an intermediate level of organization between headquarters and the local level. Inception of the NEAR program, which allows states to use highway safety block grant funds to develop or upgrade CB capabilities, accelerated

the creation of team councils to provide a state-level organization through which REACT could support state NEAR programs.

As of January 1978, there were 39 REACT team councils in the United States (and one in Canada). Of these, 28 team councils served individual states; two team councils served northern and southern California, and a third served the Sierra Nevada region in eastern California and Nevada; three team councils served New York state; and two team councils each served Virginia and Maryland, with a fifth team council serving the metropolitan Washington, D.C., area. (A total of 17 states still had to create team councils.)

There are a number of unresolved organizational problems with which REACT is attempting to cope. The division of authority among headquarters, councils, and teams is one of these. While teams elect team council members, many team council officers want to exercise fairly broad powers over teams, while some teams are resisting the erosion of their traditional powers. The problem is further complicated by proposals to create another organizational level between team councils and headquarters, which would consolidate team councils into several regional components.

The degree to which the governance of REACT is subject to control by teams and team councils is another problem being explored. Initial steps taken have included the initiation of annual conventions, which have brought staff, board members, representatives of team councils and some teams, interested individual members, and outside speakers together to exchange information, review progress, and discuss problems and possible solutions. Under discussion are possible changes to the Board of Directors, which would be composed of elective and appointive members (or, in some proposals, of all elective members).

REACT publishes the <u>National REACTER</u>, a newsletter appearing aperiodically throughout the year. It contains information on REACT activities, FCC actions, and other matters of concern to members. Complaints have been voiced by members about the lack of firm publication schedules and the absence of specific how-to details in some stories. In the past, the <u>National REACTER</u>

was distributed to teams for redistribution to their members. This approach sometimes caused severe delays in getting it into the hands of members. REACT is, consequently, in the process of developing a computerized mailing list, which will be used to mail the National REACTER and other information directly to individual members.

The organization has developed a significant amount of support material including a REACT Monitoring Guide, which explains how to respond to both emergency and routine requests for assistance received over Channel 9. The Monitoring Guide provides the basis for operations by the various REACT teams. REACT attempts to collect data from teams on Channel 9 traffic handled by type and disposition. These data are not supplied reliably by all teams, and REACT headquarters currently lacks computer facilities and personnel to consolidate and analyze the data it receives; plans are to computerize the data in the future.

The organization has developed a variety of other materials including press releases for publicizing REACT team activities, awards for recognizing the accomplishments by both team members and outsiders, guidance for raising operating funds, and materials to assist with various administrative activities. It has also developed a line of products which serve to identify members (for example, decals, vests, and jackets) and to raise funds (for example, distress signals motorists can use to request assistance). Finally, REACT has a brief but effective film, which it uses in recruiting and public relations functions.

Under contract to NHTSA, REACT is developing a training program for the NEAR program. This package will include an orientation film, course outline, instructor's guide, and students' manual. It is intended for use by both emergency services personnel and CB volunteers. While the training materials will be available for both REACT and non-REACT CBers, the experience in developing the materials should contribute to the overall capabilities of the organization.

In summary, while REACT has experienced some growing pains in the recent past, and is likely to experience them in the future, it is a sound organization. It

has produced a corps of volunteers, the vast majority of whom are disciplined and take pride in their services and skills. The organization has good visibility among the public and a good reputation among local civil preparedness agencies and state police/state patrol agencies.

3.3 ALERT[1]

ALERT, which stands for Affiliated League of Emergency Radio Teams, was established in 1963 by a Midwestern distributor of CB radio equipment as a profit-making venture. The organization retained its nominal for-profit status, but gradually severed its ties with its original sponsor. In fact, it operated like REACT and apparently did not exploit its profit-making charter. It remained essentially a one-person opeation until October 1976, when it merged with the American Citizen Band Operators Association, Inc. (ACBOA). ALERT, which had been headquartered in Washington, D.C., moved to Gettysburg, Pennsylvania, the headquarters of ACBOA.

ACBOA was founded in 1974 as a nonprofit, public service organization. Its objectives were primarily disseminating information on CB to its members; encouraging proper use of CB; creating affiliated chapters throughout the country to bring members together to share common interests, develop special projects, and participate in community affairs; and addressing issues of concern to members, and CBers in general, before the FCC, Congress, and other public bodies. Policy is established by its officers. ACBOA maintains a small staff in Gettysburg and a liaison office in Washington, D.C.[1] After the merger, ALERT became a section of ACBOA, and plans called for it to retain its identity within ACBOA. Its long-time director became president of the ALERT Section and a vice president of ACBOA. In 1977, ACBOA broadened its activities by establishing a program of school CB radio clubs to teach student members proper CB operating practice, to monitor the activity of school vehicles, and to raise money to purchase CB equipment.

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[1] In early 1978, ACBOA/ALERT encountered financial problems, obtained new funding, reorganized, and moved to New Castle, Delaware. The impact of the reorganization on ACBOA/ALERT programs, and the continuing viability of ALERT are unknown at this time.

Like REACT, the basic organizational component of ALERT is the local team. Teams include a minimum of 10 members. In contrast to REACT, however, ALERT accepted memberships from individuals. This practice has continued under ACBOA, which also accepts individual memberships.

ALERT teams are encouraged to perform public service functions. ALERT, however, lacks the explicit goal of monitoring Channel 9 on a full-time basis. In actuality, however, most ALERT teams (and many individual members) do monitor Channel 9, Channel 19, or other channels in local use.

As of January 1978, ALERT had 439 teams operating in 45 states.[1] This represents a negligible growth in teams during 1977. (Figure 7-2 shows the distribution of ALERT teams by state. It also shows the locations of present and planned state organizations.) As is the case with REACT, teams are semiautonomous; many of them are separately incorporated entities. ALERT has tried to limit teams to one per community except in metropolitan areas in which multiple teams have been chartered. In part because of this policy, and in part because of the lower number of teams, ALERT has avoided most, but not all, of the interteam conflicts that have developed among some overlapping REACT teams. The smaller number of teams has obviously resulted in sparser geographic coverage than REACT.

To help manage the team structure, ALERT started to develop state or substate organizations even before its merger with ACBOA. These organizations are now operational in California (which includes 40 teams), Illinois (15 teams), Indiana (20 teams), Ohio (24 teams), Texas (22 teams), West Virginia (20 teams), and Wisconsin (10 teams). In California, the state was divided into three substate organizations; in Ohio, into four such organizations.

ACBOA has one chapter in operation in each of 10 states; two chapters in each of three states; and three chapters in each of two states; and four chapters

[1] Peggy-Ann Cook, Director, ALERT Team Services, letter to Murray Rosenthal, subject: ACBOA Organization, January 13, 1978. All other current statistics on ACBOA/ALERT programs are derived from this letter.

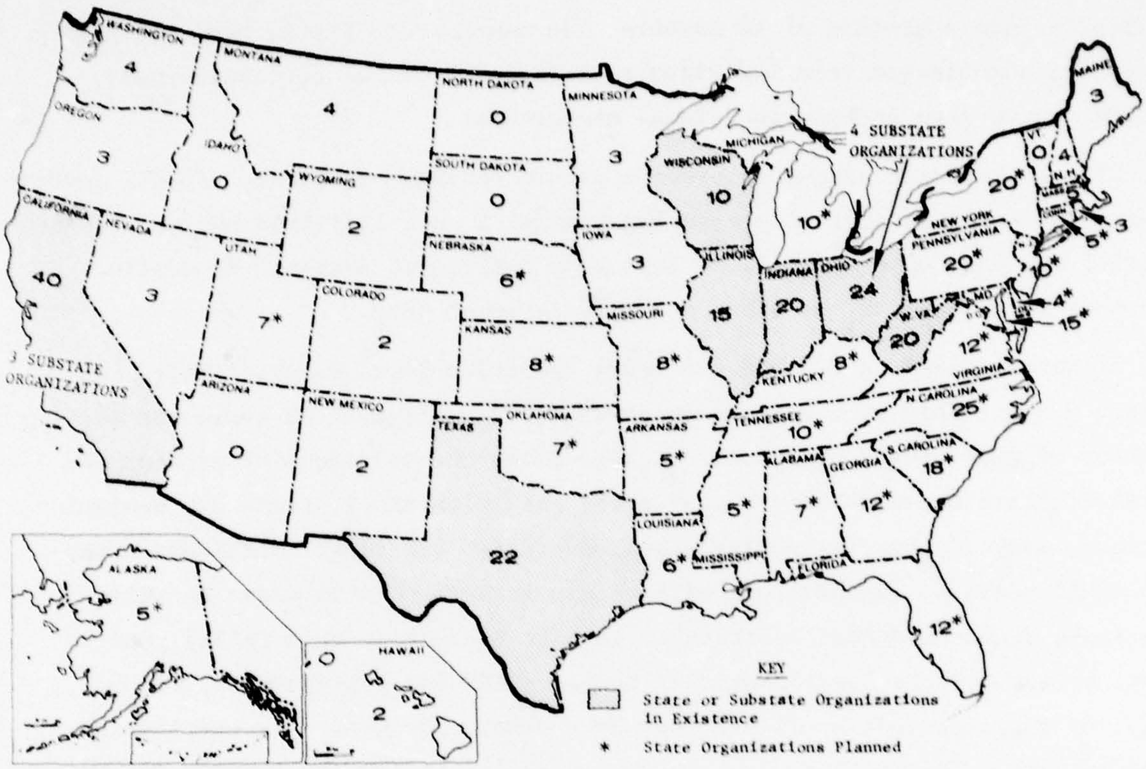

Figure 7-2. Distribution of ALERT Teams and State Organizations

in each of two other states. ACBOA is now consolidating the ALERT state organizations with its own state structure. ACBOA/ALERT anticipates creating 25 additional state-level organizations by mid-1978. Some meetings of ALERT substate organizations had occurred in California and Ohio, but neither ACBOA nor ALERT initiated planned conventions in other states or at the national level.

In late 1977, the long-term manager of ALERT, then president of the ALERT Section and vice president of ACBOA, left ACBOA/ALERT or was discharged by the

organization, potentially damaging the long-term stability of the organization. A number of complaints have been voiced about the lack of service available from ALERT, which may predate its merger with ACBOA. These complaints include failure to provide promised materials and to respond to requests for information and support. These problems may have been exaggerated by a significant increase in membership fees in the transition from ALERT to ACBOA.

ALERT has produced a small magazine entitled 44, which was distributed aperiodically and was faulted for its lack of a predictable publication schedules. ACBOA produces the American Monitor Magazine, which is brief (16 pages), but professional in its contents and appearance. It has replaced 44 as the means of communicating with ALERT members. It features interviews with FCC personnel; reports on actions by the FCC and other federal, state, and local agencies concerned with CB; descriptions of newly released CB equipment; news of ACBOA and ALERT activities; and other articles of interest. Distribution is direct to members.

ACBOA and ALERT provide direct access for membership via Incoming Wide Area Telephone Service (In-WATTS), which allows members and others to dial a telephone number with an 800 area code to reach ACBOA/ALERT staff members promptly and without charge. ACBOA/ALERT provide members with awards, which can be presented to members and nonmembers for significant accomplishments. It has also developed products for organizational use. ACBOA/ALERT lacks training programs, except that developed for junior members in its school program. The organization has not developed publicity or fund raising programs. It does provide access to CB dealers and other merchants who offer discounts to ACBOA/ALERT members on merchandise and services.

In general, ACBOA/ALERT has been a viable organization with good local emergency capabilities. Its smaller size has deprived it of some of the attention garnered by REACT and some of REACT's influence. Development of the state-level organization lags. The merger of ACBOA and ALERT probably disturbed ongoing programs, but may ultimately provide a good base for restructuring ALERT and continue its development.

3.4 COMMUNITY RADIO WATCH

CRW was founded in 1966 by the Communications Group of Motorola Communications and Electronics Inc. CRW is a public affairs program designed to encourage two-way radio users to report incidents they observe that may require action by a police department, fire department, emergency medical service, or other agency. Initially emphasis was upon business radio users such as taxi companies, trucking companies, utilities, transit systems, and delivery services. Over the years, CRW expanded to include radio amateurs. In the past years it has further expanded to use the capabilities of CBers. Perhaps significantly, the program was planned to be moved from the Motorola Communications Group to its Automotive Products Group, which is responsible for manufacturing and marketing Motorola's line of CB radios, as of January 1, 1978.[1]

It is a modestly funded effort; about $10,000 is committed to CRW annually. Motorola supplies information to interested communities. The community must establish the program--generally through its police department--, formulate by-laws for it, develop operating procedures, and oversee its continuing operations. The reporting procedures CRW groups use varying from community to community, but follow a basic pattern. Two-way radio users, including radio amateurs and CBers, are told to report anything they see that may require emergency attention--fires, automobile accidents, robberies. Business radio users report to their dispatchers. CBers usually report to local monitors, who are sometimes located in police department facilities. Radio amateurs may report to the control operator for a local repeater; or they may use autopatch equipment to make direct radio-to-telephone connections to police dispatchers. The business dispatchers, monitors, and control operators then notify the appropriate emergency service or the local law enforcement department for action. Throughout, however, a major CRW stipulation is that radio users not involve themselves in incidents. Motorola supplies CRW

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[1] Telephone conversation with Tom Ochal, CB Marketing Manager, Automotive Products Division, Motorola Communications and Electronics Inc., December 1, 1977.

vehicle decals, brief drivers' booklets, stationery, CRW reminders, and other aids to CRW operations and management. All other activities such as conducting training and providing internal communications must be performed by local CRW sponsors.

In addition, Motorola solicits annual nominations of CRW members who have provided outstanding community service. Nominees come from CRW programs across the country. Nominations are evaluated by a nationwide panel of public safety officials. Individual awards, consisting of plaques and U.S. Savings Bonds, are presented in the recipients' home towns, generally by prominent government officials. In 1977, Motorola initiated Ten-Four Day to be commemorated annually on October 4th. To recognize the first Ten-Four Day, many governors issued proclamations calling public attention to the importance of CBers and CB radio to the nation's communications capabilities.

Motorola does not provide for the exchange of information among CRW programs. In fact, its current mailing list includes about 800 communities, but Motorola personnel do not know which have operational CRW programs. An effort has just been initiated to query the communities on the mailing list to weed out those that either did not establish or have abandoned CRW programs.

CRW currently lacks the organizational structure necessary for effective interaction with DCPA. CRW is, however, one of the best models for using volunteer radio operators. It must involve close agency supervision. It combines CBers as well as radio amateurs and business radio users. CRW operates at a low level on a day-to-day basis, giving participants experience in low-stress situations, building involvement in the programs, and developing discipline. CRW can, furthermore, be expanded readily to handle increasing levels of emergency activities built on the day-to-day experience of its participants. As a good model, its advantages should be known to DCPA, as well as to state and local civil preparedness agencies. It may be feasible, in addition, to work with the Motorola Automotive Products Division to develop a more structured approach to CRW, allowing for more adequate interactions with DCPA and state-level civil preparedness agencies.

3.5 U.S. CITIZEN RADIO COUNCIL

The USCRC was founded in 1971 to work for the improvement of the CB Radio Service through changes in the Communications Act of 1934 and through revisions in the FCC's Rules and Regulations and improvement of their enforcement. The USCRC includes both organizational members (state CB councils), honorary members (representatives of manufacturers, news media, and other national organizations), and individual members. The USCRC is a nonprofit corporation. Its member councils are also generally nonprofit corporations. Many of them are REACT state team councils, creating some overlap with the REACT organizations, which does not appear to cause any serious problems.

The organization operates with an entirely volunteer staff. Activities of the council are conducted by four elected officers and the members of various subcommittees. Policy is established at semiannual meetings, one of which must be held each year in the Washington, D.C., area.

State councils must have statewide authority and represent at least five CB clubs. They must also send accredited representatives to two meetings before those councils can be accepted for membership in the USCRC. Upon acceptance, a state representative can cast one vote on behalf of the state he represents. Positions taken by the USCRC are advisory to state council members and do not bind those state council members to support similar positions unless they do so by their internal actions. It is, therefore, possible for a majority of state council members to take a position, which is then implemented by USCRC officers, but which is opposed by some of its state council members.

Individual members can attend meetings and participate in deliberations, but cannot vote. Participating state councils are urged to recruit at least 51 percent of their members into USCRC. Honorary members can also present their views to USCRC meetings, but cannot vote. Representatives of REACT, ACBOA/ALERT, and the Electronics Industries Association constitute an advisory board to develop recommendations for the Council, but the representatives of these organizations also cannot vote. At present 27 state councils belong to the USCRC or are in the process of qualifying for membership. USCRC, therefore, does not currently provide full national coverage.

The *Carolina CB Journal* serves as the official publication of the USCRC. The USCRC adds a tabloid-sized "National News Bulletin," which is inserted in the *Carolina CB Journal*. The "National News Bulletin" contains specific information on USCRC activities and summarizes FCC actions on CB and related matters. The latter are generally extracted from the *FCC Action ALERTS*, which are weekly summaries published by the FCC. Joint distribution of the *Carolina CB Journal* and the "National News Bulletin" is to individual members of USCRC only. To the extent that state councils have recruited individual members into USCRC, the *Journal* - "Bulletin" combination provides an effective means of communications. While the USCRC is primarily an organization encouraging coordination and communications among state-level CB councils, it provides a potentially helpful vehicle DCPA can use to develop and coordinate state-level programs. As USCRC adds states to its roster, its potential value to DCPA will increase.

4. ROLE OF TRUCKSTOPS IN EMERGENCY CB USE

The facilities and services provided by truckstops, as well as their locations on main travel routes, have made them attractive as supply points in the event it becomes necessary to relocate the population of risk areas. The role of truckstops in a situation involving crisis relocation has been the subject of a recent DCPA-funded study.[1] The present study addresses only one specific aspect of truckstop operations in emergencies--their access to CB and other communications.

4.1 TRUCKSTOP CAPABILITIES

There are over 2,600 truckstops located throughout the United States. Most of them are on Interstate Highways or other major trucking routes. Only about 5 percent of truckstops are located in urban areas. The vast majority

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[1] John Billheimer, *et al.*, *Postattack Impacts of the Crisis Relocation Strategy on Transportation Systems*, Vol. 3, *Role of Truckstops in Crisis Relocation*, Systan Incorporated, D151.1, January 1978.

of truckstops operate 24 hours per day, every day of the year. In addition to supplying diesel fuel and gasoline, truckstops also service trucks (and often automobiles), provide food service, frequently provide sleeping accommodations, and generally sell a variety of merchandise, including food and sundries.

4.2 COMMUNICATIONS CAPABILITIES

Most truckstops have access to one or more commercial communications networks, which are used to transmit load assignments, permits, and money to truck drivers. These networks include:

1. Western Union (Telex)
2. Mid Continent Interstate Service Corporation
3. Insta/Com
4. American Facsimile Systems, Inc. (Transceiver, T-Check)
5. Graphic Scanning Corporation (Dial-a-Check)
6. Comdata Network (Com Check)

The first two of these systems transmit message traffic over the Western Union Telex network. Permits and load assignments are transmitted in this manner. Western Union also transfers funds between locations in the form of message traffic. The two organizations have different terminal locations and bill independently for services rendered. Mid Continent also use the dial telephone network to transfer funds between locations. Mid Continent uses special security procedures to authenticate both transfers and disbursements to recipients.

Insta/Com, American Facsimile Systems, Inc., and Graphic Scanning Corporation transmit load assignments, permits, and money via the dial telephone network. Documents such as permits are transmitted as facsimile messages. Money may be transferred in the form of facsimile checks, or it may be transferred by voice messages, using authentication procedures to assure security.

The Comdata Network (through its Com Check service) only transfers funds, which it does by voice messages transmitted over the dial telephone network.

It uses authentication procedures to protect both funds transfers and disbursements to recipients. The Comdate Network is the most commonly used truckstop communications service; an estimated 94 percent of truckstops are served by Comdata Network.[1]

Virtually all truckstops also have CB transceivers. In some cases, especially in rural locations, these CB transceivers are actively monitored to communicate with truckers. In other cases, generally in urban and suburban locations, the amount of CB traffic, and consequently the amount of noise, precludes active monitoring, and transceivers are primarily used to sell CB equipment. (Some truckstops also service CB equipment.) Transceivers maintained for sales purposes can be used as needed, however, and are often monitored during snow storms and other inclement weather.

4.3 POTENTIAL APPLICATIONS OF TRUCKSTOP COMMUNICATIONS CAPABILITIES

In the event of a civil preparedness emergency, it is often ncessary to communicate with persons travelling in motor vehicles. This necessity can involve locating specific individuals or disseminating information to all travelers. Emergencies can include peacetime natural disasters such as floods and hurricanes, which involve the evacuation of threatened areas; they can also involve the threat of a nuclear attack and the consequent relocation of risk area populations.

There are only limited means available to locate a specific individual, and some relatively casual use has been made of the CB Radio Service of this purpose. The most common way to reach a number of travelers is through broadcasts over commercial radio stations. Other means are occasionally used, including signs and travelers' information stations (see Chapter X for information in these stations). CB radio can also be used to reach large numbers of travelers during emergencies.

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[1] John Billheimer, et al., Op Cit., p. 7a.

Both personal and general messages can be input to truckstops through the various communications systems used to handle load assignments, permits, and payments. Many of the networks, including the dial telephone network, can be used to provide a single trucksop (or a limited number of them) with information for retransmission over the CB Radio Service. Only the Telex-derived networks, however, are suitable for broad dissemination of messages because they have the capability of sending a single message simultaneously to a number of addresses. Telex-derived networks also provide extensive truckstop coverage; an estimated 78 percent of truckstops are on the Telex network.[1] Messages transmitted over Telex-derived networks and facsimile systems are, furthermore, preferable to voice messages because they provide truckstop personnel with hard copy from which to work.

Considerable flexibility exists in all networks as to access points. Any truckstop can transmit to any other truckstop equipped with the appropriate equipment. In addition, the Telex-derived networks can be accessed from any compatible teletypewriter terminal by going through the appropriate network control facilities. Similarly any facsimile networks can be accessed from a compatible facsimile terminal. Thus an official in a state civil preparedness agency equipped with a Telex terminal can potentially reach any Telex-equipped truckstop or combinations of them in his state with messages to be retransmitted via CB radio. A person in a state civil preparedness agency can also reach facsimile-equipped truckstops if he has access to a suitable terminal. Messages received at truckstops can also be posted to make information available to all persons using the truckstops. Truckstop personnel can also monitor CB transmissions and report to authorities any conditions requiring action.

4.4 LIMITATIONS ON USE OF TRUCKSTOP COMMUNICATIONS

Several problems must be noted. The use of the various networks serving truckstops is feasible only if those networks have not been damaged and are

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[1] *Loc. Cit.*

not congested. Since telephone and Telex circuits are subject to attack damage, their use after an attack is unlikely. These circuits may also be disrupted locally by a natural disaster. Voice circuits may be congested during a crisis relocation situation, but Telex circuits are less likely to be overloaded because they are not directly accessible to the general public, and because many businesses will be closed, reducing some of the load on these circuits. Furthermore, CB transceivers installed at truckstops will not provide continuous coverage of the interstate highways and will provide only spotty coverage of some of the secondary highways used for crisis relocation.

Since truckstops are commercial ventures, any support they provide will be on a voluntary basis, unless truckstops are reimbursed for services rendered, or unless they are taken over, in the event of a national emergency, by the federal government. Any support rendered in truckstop personnel is likely to differ from normal operations and, therefore, requires some advanced preparation and awareness on the part of truckstop personnel about their emergency activities. In order to use truckstop communications capabilities, it is necessary to recruit truckstop operators and to orient their personnel. Such an effort is probably not warrented solely for the kinds of communications services discussed here, but should be incorporated into any DCPA-sponsored efforts to use truckstops in broader civil preparedness operations.

Even if truckstop operators prove willing to support crisis relocation efforts and other civil preparedness activities, it is essential not to overtax the capabilities available. Thus efforts to locate specific individuals, which can be very time consuming, should be made only under dire circumstances. It is also appropriate not to exceed the capabilities of truckstops in broadcasting general messages over CB channels, or in monitoring and relaying other CB transmissions. To ease the burden on truckstop personnel, it may be appropriate to provide support to them. In a limited emergency, support can possibly come from CB volunteers. In a situation requiring relocating the population, support can possibly come from either CB volunteers or relocated government or industry personnel whose risk area functions are not essential. Clearly truckstop operators should be reimbursed for all out-of-pocket costs.

The current chapter has described the general capabilities of volunteer CB organizations. In the next chapter, these capabilities will be elaborated upon through presentation of detailed information on a random sample of REACT and ALERT teams

CHAPTER VIII

SURVEY DATA FOR REACT AND ALERT TEAMS

Because of the semiautonomous nature of teams, staff members for neither REACT International, Inc., nor the ALERT Section, American Citizens Band Operators Association, Inc., could provide comprehensive information on team organization and capabilities. Members of organizations provides suggestions on exemplary teams. They also provided a number of newspaper and magazine articles containing descriptions of teams, usually as a result of their performance in an emergency or at a major public function.

To develop more systematic information on REACT and ALERT teams, a survey was conducted of teams in both organizations. This chapter presents the findings of that survey. The information contained in this section is intended to present an overall picture of team operations. Considerable detail is included to show team capabilities, the degree of discipline available from teams, and the extent of services currently or potentially available from them.

1. METHODOLOGY

In order to collect the required information, a questionnaire was developed and submitted to a 10-percent random sample of team leaders in both REACT and ALERT. In preparing the survey, informal telephone interviews were conducted with 10 REACT team leaders. (The questionnaire appears in Appendix G, pages G-49 through G-56.)

The sample of REACT and ALERT teams was drawn on a state-by-state basis. The REACT sample was drawn first, using the then-current Team Directory as the basis for sampling.[1] A random number table was used to select 10 percent of the teams listed for each state. All teams in U.S. territories, Canada, and in other foreign countries were disregarded. A minimum of one team was drawn

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[1] REACT, Team Directory, October 1976.

from each state and the District of Columbia. The numbers of teams in the sample from each state was rounded up, furthermore, for fractional components of 0.5 or greater. (For example, Minnesota had 17 teams listed in the Team Directory; 10 percent of 17 teams equals 1.7; and rounding increased the number of Minnesota teams in the REACT sample to 2.) REACT then provided addresses on mailing labels for selected teams.

After the REACT sample had been drawn, a similar technique was used to draw one for ALERT. ALERT, however, did not and does not publish a team roster, and ACBOA/ALERT personnel did most of the actual sampling.[1] Initially ACBOA/ALERT personnel provided a count of teams by state. Sample sizes were then determined; random numbers, selected for identifying teams to be surveyed; and a simple set of instructions, prepared for drawing the sample. ACBOA/ALERT personnel then identified specific teams and provided addresses for them.

The REACT Team Directory used for sampling included a total of 1,492 teams in the 50 states and the District of Columbia. Using the sampling procedure described, questionnaires were sent to 160 teams. Responses from three addressees indicated that their teams had disbanded. Another response contained a refusal to supply the requested information. One response indicated that a REACT team in the sample was operated as an adjunct to a local civil preparedness agency, which had already responded to the survey of such agencies (see Chapter V, Section 1). All five of these teams were replaced by randomly selected substitutes. In addition, by an unknown mechanism, one REACT team responded for another apparently disbanded team, which had been located in the same state, but several hundred miles away.

Two mail follow-ups were used to encourage a good response. Of the 160 questionnaires sent out (including the five replacements), respondents for 127 teams returned completed questionnaires. The overall response rate for

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[1] Telephone Conversation with Robert Thompson, Vice President ALERT, March 25, 1977; Murray Rosenthal, letter to Robert Thompson, subject: Sample of ALERT Teams, March 29, 1977; Robert Thompson letter to Murray Rosenthal, subject: Names and Addresses for ALERT Teams, April 15, 1977.

REACT teams was, therefore, 79 percent. The four teams that had disbanded suggests that about 2 percent of the teams in the REACT Team Directory had disbanded.

ALERT files upon which sampling was based included 436 teams in 44 states. Using the sampling procedure described, questionnaires were sent to 57 ALERT teams. Responses indicated that five of the sampled teams had disbanded; returns by the U.S. Postal Service, that five others of the sampled teams had probably disbanded. Initially, an effort was made to replace disbanded teams with randomly selected substitutes, and two such replacements were secured. The relatively large number of replacements required made drawing them with the assistance of ACBOA/ALERT personnel slow and cumbersome; of necessity, this part of the survey methodology was abondoned for ALERT teams.

Two mail follow-ups were used, however, and completed questionnaires were received from respondents for 27 ALERT teams. Operating (or apparently operating) ALERT teams finally produced a net response rate of 55 percent. (This percentage is based upon the 57 questionnaires originally mailed and two replacement questionnaires less the 10 questionnaires sent to defunct teams.) The 10 questionnaires sent to disbanded or apparently disbanded teams suggests that about 18 percenr of the ALERT teams in the ACBOA/ALERT roster had been disbanded.

The general locations of responding READT and ALERT teams are shown in Figure 8-1.

Note that each location is classified according to whether the team's address, which is often the address of one of its officers, falls into a standard metropolitan statistical area (SMSA), or outside an SMSA. Each team in an SMSA was also classified by whether it was located in an urbanized area, or outside an urbanized area. The definitions of urbanized areas and SMSAs are those used by the U.S. Bureau of the Census, and both types of areas were as defined in 1972.[1]

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[1] U.S. Bureau of Census, County and City Data Book, 1972, U.S. Government Printing Office, Washington, D.C. 1973. Definitions appear on pp. xxxi-xxxv; SMSA maps appear on pp. 970-1020.

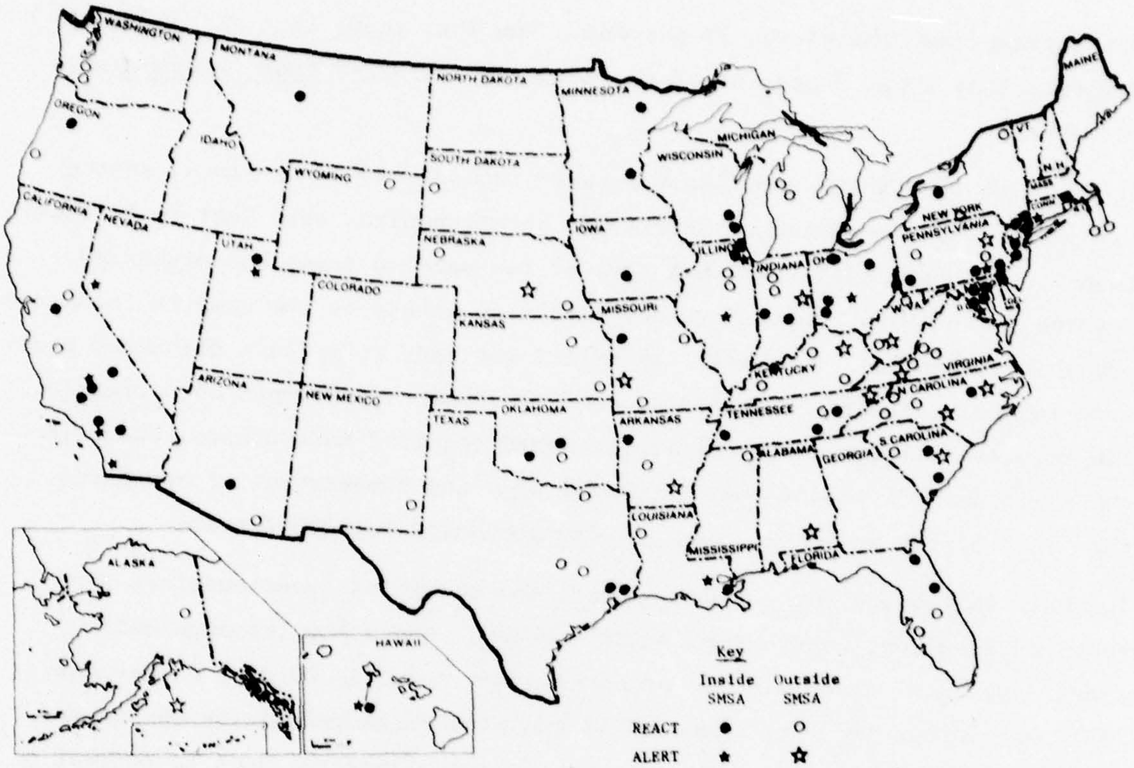

Figure 8-1. Locations of REACT and ALERT Teams in Survey Sample

The urbanized area and SMSA classifications were used in an effort to determine whether there were any significant differences between teams and team experiences with CB (for example, channel congestion, interference, and lack of operator discipline) for locations in metropolitan areas and locations in less densely populated settings. Those teams with addresses in urbanized areas were assumed to have many of their members located primarily in built-up areas. Those teams with addresses outside of urbanized areas, but in SMSAs, were assumed to have many of their members in suburbs. In a few cases, this latter assumption is not valid, but these exceptions do appear to invalidate the overall approach. Of the 133 responses received from REACT and ALERT teams, 52 (or 39 percent) came from teams with addresses in

urbanized areas; 17 (or 13 percent), from teams with addresses outside of urbanized areas, but in SMSAs; and 64 (or 48 percent), from teams with addresses outside SMSAs. Based on this distribution, about one-half of the teams surveyed fell outside areas with heavy population concentrations, and about one-half fell in areas with heavy population concentrations or in suburban areas adjacent to them. Examination of questionnaire responses indicated that there were no significant differences between teams or team experiences with CB based upon these locational factors.

2. ATTITUDES TOWARD THE CB RADIO SERVICE EXPRESSED BY REACT AND ALERT TEAMS

The predominant quality that emerged from studying the 133 questionnaires responses was the serious, dedicated attitude of respondents and their deep concern about being able to continue their public service activities, particularly monitoring Channel 9, in the face of channel congestion and poor operating practices. Of 133 questionnaire responses, 126 (or 96 percent) indicated that increased control of CB use was essential. Emphasis was clearly on maintaining (or restoring) discipline on Channel 9 and on being able to clear working channels to support emergency operations when all necessary traffic could not be carried on Channel 9. Four respondents (or 3 percent) did not advocate tighter control of CB use, three because they had not experienced problems, and one because he had become convinced that CB use could not be controlled more tightly, especially in large cities. Finally, three respondents (or 2 percent) did not express opinions.

A total of 106 respondents identified a total of 124 problems as follows:

- General lack of discipline - 31
- Interference with emergency communications - 29
- Adjacent channel interference with Channel 9 - 22
- Refusal to yield channels in emergencies - 20
- Use of illegal amplifiers; overmodulation - 7
- Abuse of CB by juveniles - 6
- Technical problems with 27 MHz frequencies - 4

- Channel congestion - 2
- Miscellaneous - 3

A total of 114 respondents provided a total of 154 suggestions for improving the situation:

- Increased FCC enforcement, generally by using more personnel and stiffer penalties - 44
- Support of FCC enforcement by CB volunteers - 14
- Increased enforcement (general) - 13
- Delegation of enforcement to state or local governments - 13
- Allowing state and local governments, or volunteer CB organizations to control CB channels in emergencies - 19
- Setting aside Channels 8 and 10 as emergency working channels to protect Channel 9 - 12
- Public education on the proper use of CB - 10
- Increase fees and apply to FCC enforcement - 6
- Require a license before purchase of CB equipment - 4
- Prohibit juveniles from using CB - 3
- Miscellaneous - 4

In many cases, REACT and ALERT teams appeared to make up in dedication and ingenuity for the regulatory changes they advocated, but which are unlikely to occur in the near future.

3. FUNCTIONS PERFORMED BY REACT AND ALERT TEAMS

The primary purpose of REACT and ALERT teams is responding to requests for assistance received over Channel 9 or other CB channels. Consistent with this purpose, all 133 respondents indicated that their teams received such requests and relayed them to the appropriate authorities; and 132 of the respondents indicated that their provided information to motorists requesting that form of assistance. (The failure of one respondent to indicate that his team provided informational assistance appears to be an oversight or misunderstanding of the question.) In addition, the respondents for 124 teams (or 93 percent) indicated that their teams received crime reports and relayed

them to the appropriate authorities. Only two teams (the Oregon Bay Area REACT Team, Coquille, Oregon, and the Seward ALERT Team, Seward, Alaska) reported providing assistance to boaters. It is evident, however, that other teams on the Atlantic and Pacific coasts, the Great Lakes, and other lake and river areas also handle calls from boaters. This type of service was not specifically called out in the questionnaire, which probably accounts for the failure of additional respondents to report it.

Respondents reported less consistent performance of other types of activities. For example, 102 respondents (or 77 percent) reported their teams actually went to stranded motorists and others needing assistance and provided them assistance. It is not certain, however, how frequently or consistently teams provided such direct assistance. Respondents for only five teams (or 5 percent of those reporting providing physical assistance) indicated that their teams had organized courtesy patrols either on holidays or over more extended periods. Respondents for several additional teams indicated that their members provided only limited direct assistance to motorists. Many REACT and ALERT team members spoken to in person indicated they had stopped to provide assistance while in route to some personal distination. It is likely that members of many of the teams surveyed also provided direct assistance on such a personal basis.

In addition to courtesy patrols and more casual types of direct aid, REACT and ALERT teams reported providing assistance to motorists in the form of highway safety rest breaks, which were generally conducted over holiday weekends to allow tired drivers to stop for coffee and doughnuts. (These functions often served as fund raisers for the teams involved, since donations were usually accepted in return for the service.) A total of nine respondents (or 7 percent) indicated that their teams provide this service to motorists several times a year, and, in fact, the number of teams participating in these activities may actually have been higher.

Only relatively few teams conducted neighborhood patrols to reduce or prevent crime in their communities. Respondents for only 52 teams (or 39 percent)

indicated their members performed this function. Only one team, the CB Trail Blazers ALERT Team, Lynwood, California, indicated having a strong neighborhood patrol function. Its patrol activities ended, however, when Lynwood contracted with the Los Angeles County Sheriff's Office for law enforcement services and that agency prohibited patrolling. In fact, the Trail Blazers were contemplating disbanding because of their inability to continue their patrol activities. The respondent for the REACT Rangers Team, Virginia, Minnesota, reported conducting occasional patrols of shopping centers and other large parking lots in an effort to inhibit theft of CB transceivers from parked cars. The respondent for the REACT Rangers Team and four other respondents indicated that their teams patrolled over holidays (most frequently Halloween). Four respondents who indicated their teams did not conduct patrols, expressed strong oppositions to performing this function. Again based on personal contacts with REACT and ALERT team members, it appears that most of the teams performed patrol functions on an occasional basis generally associated with holidays or special events.

Search and rescue activities were reportedly performed by 99 teams (or 66 percent of the teams surveyed). The respondents for the REACT Rescue Team, Logan, West Virginia, indicated that his team is primarily concerned with this function. (This team, furthermore, appears to have encountered so much interference on Channel 9 that it had abandoned its monitoring function on a scheduled basis.) Respondents for several other teams indicated, by the special equipment their teams owned and by other responses, that they were also heavily committed to search and rescue activities. In general, however, most teams seemed to perform this function on a sporadic basis as they were called upon to do so.

A much more consistent picture emerges from survey responses on supporting public functions such as vaccination clinics, parades, and fairs. A total of 106 respondents (or 80 percent) indicated that their teams provided this type of assistance. The public service types of activities occur intermittently and are probably much more compatible with volunteer commitments

than is patrolling. Public affairs support roles, which put team members into contact with the public also tend to be performed under supervision, which protects CBers from possible danger and also limits the potential for vigilantism.

Related to these kinds of activities are activities intended to provide charitable aid to groups and individuals. Many teams conduct or participate in fund raising activities for other organizations. In some cases these activities involve using CB equipment to support walk-a-thons and bike-a-thons. In other cases, teams actually raised money for other organizations, sometimes by making appeals to other CBers over their radios. In other cases, recipients included needy individuals and families. These activities appear to have been very direct and personal. They included, for example, collecting food for the needy (Rutherford County REACT Team, Rutherford, North Carolina) and cutting wood for welfare recipients (Wilson County ALERT Team, Wilson, North Carolina). In all, at least 17 respondents (or 13 percent) specifically referred to the charitable aspects of their teams' activities.

Services related to emergencies were reported by a number of respondents. For example, 10 respondents (or 8 percent) indicated that their members partipated in the National Weather Service Skywarn program. Two respondents indicated that their teams worked with the California Department of Forestry to provide fire patrols during periods of high fire danger. Teams reportedly participating in this activity were the San Bernardino Valley REACT Team, San Bernardino, and the Port City ALERT Team, El Cajon. It is well known that many REACT and ALERT teams are perpared to give first aid and that some are prepared to apply more advanced life-saving techniques. Questionnaire responses suggested this capability, but only two respondents specifically indicated that giving first aid was among their emergency functions. These teams were the Cherokee County REACT Team, Galena, Kansas, and the Brooklyn Area REACT Team, Brooklyn, New York. Reflecting the shortage of telephone service in Alaska, the Northern Lights REACT Team, Delta Junction, Alaska, indicated that it had relayed messages from station to station in those areas in which telephones were not available or in which outages had occurred.

In the area of emergency operations, respondents for 83 REACT and ALERT teams (or 62 percent of those surveyed) indicated their teams had experience in supporting emergency operations. Of these, 19 respondents (or 23 percent of those claiming emergency experience) failed to supply a requested description of the most recent large-scale emergency operation in which their teams had participated. Respondents for 14 teams each supplied more than one example; however, only the most recent example was considered in the following analysis. (Some of the examples supplied, including some from teams for which multiple examples were supplied, probably do not represent true large-scale emergencies, but there was no reliable basis upon which to separate suitable from unsuitable examples.) Table 8-1 shows the time distribution for the emergency efforts reported. As indicated in the table, 34 of the emergencies reported

Table 8-1. Dates of Emergency Experiences Reported by REACT and ALERT Teams

Date of Reported Emergency	Number of Teams Reporting	Percentage*
1977	19	29
1976	15	23
1975	8	12
1974	2	3
1973	3	5
1972	1	2
1971	1	2
No Date Given	16	25

n = 65

*Does not add to 100 percent because of rounding

(or 52 percent) occurred in 1976 or 1977. Table 8-2 indicates the types of functions performed in the 65 reported emergencies. Interestingly, the respondents for the REACT and ALERT teams surveyed indicated that their teams performed communications functions in only 25 (or 38 percent) of the 65

Table 8-2. Functions Performed by REACT and ALERT Teams in Emergencies

Emergency Reported	Communications	Communications and Other	Other	Not Specified	Total
Fires and Explosions	5	2	5	1	13
Search and Rescue Missions	1	1	1	9	12
Blizzards	1	3	7	1	12
Tornadoes	3	-	4	1	8
Flash and River Floods	2	1	2	3	8
Hurricanes	1	2	-	-	3
Miscellaneous	2	1	4	2	9
Total	15	10	23	17	65
Percentage*	23	15	35	26	100

*Does not add to 100 percent because of rounding

reported emergencies. Communications functions included coordinating among agencies or locations otherwise lacking communications, reporting damage incurred and assistance needed, and broadcasting condition reports to the public via CB. In 10 of these emergencies, the teams also performed other functions. In 23 of the reported emergencies, team functions principally involved activities other than providing communications support. These noncommunications activities included controlling traffic; limiting access

to the disaster area; patrolling to prevent looting; locating victims; and supplying food, fuel, and medicine to those isolated and otherwise unable to obtain them during the emergencies. (The miscellaneous emergencies in Table 8-2 include two highway accidents; two aircraft accidents; a boating accident; a blackout; a hospital emergency; a tsunami; and one emergency for which the respondent suppled CB-related information, but for which he did not define the cause of the emergency.)

4. SIZE AND STRUCTURE OF REACT AND ALERT TEAMS

REACT and ALERT teams display a wide range of sizes. Respondents indicated teams sizes varying from 7 to 500 members. One respondent (for the Edwards REACT Team, Edwards Air Force Base, California), indicated that his team size varied from 5 to 40 members depending upon transfers onto or off the base. Table 8-3 shows the distribution of team sizes reported.

Table 8-3. Number of CB Volunteers in REACT and ALERT Teams

Number of Volunteers	REACT Teams	REACT Percentage*	ALERT Teams	ALERT Percentage	Total Teams	Total Percentage*
	n=106		n=27		n=133	
Under 10	3	3	0	-	3	2
11-20	10	9	7	26	17	13
21-30	28	26	9	33	37	28
31-40	17	16	4	15	21	16
41-50	12	11	3	11	15	11
51-60	6	6	2	7	8	6
61-80	10	9	2	7	12	9
81-100	9	8	0	-	9	7
101-150	3	3	0	-	3	2
151-200	3	3	0	-	3	2
201 or more	3	3	0	-	3	2
Unknown	2	2	0	-	2	2

*Does not add to 100 percent because of rounding

The mean team size reported was approximately 52 members for all teams; 57 for REACT teams; and 25, for ALERT teams. The difference is accounted for by the absence of any ALERT teams with more than 75 members. Considering all responses, teams located in SMSAs do not have significantly larger memberships than teams located outside SMSAs.

In general, REACT and ALERT teams surveyed have very simple structures. Respondents indicated that 79 teams (or 59 percent) had vested responsibility in a president, vice president, secretary, treasurer, and other parliamentary officers. Only 19 of these teams (or 24 percent of the "parliamentary" teams) had explicitly developed a subordinate structure dividing responsibility either functionally or geographically among subordinate team components. In contrast, respondents indicated that 5 teams (or 4 percent) had vested responsibility in a commander, major, or captain and other military positions or ranks. Four of these teams (or 80 percent of the "military" teams) had explicitly developed a subordinate functional or geographic structure. Finally, respondents indicated that 17 teams (or 13 percent) had developed a mix of parliamentary and military officers. Of these, 11 (or 65 percent of these "mixed" teams) had explicitly developed subordinate structures. A total of 32 respondents (or 24 percent) did not identify their team structures.

There are also a wide variety of territorial arrangements claimed by various teams. It is not possible to make any categorical statements on this subject, since the sample selected on the present study does not allow an overall assessment of the degree of overlap among REACT and ALERT teams. It is possible, however, to point out a wide range of approaches to defining areas of responsibility. In general, teams have assumed responsibility for full counties, and their areas of responsibility are reflected in their names. Some teams have defined responsibility by drawing a radius around their "home" locations. Thus the Bi-State REACT Team, Ft. Smith, Arkansas, defined its area as a circle with a 15 mile radius centered on Ft. Smith. The Barton County ALERT Team defined its area of responsibility as Barton County and surrounding counties within a 100-mile radius of Lamar, Missouri. Other teams have defined their service areas as all of their metropolitan areas, while others have defined

only one or a few suburbs as their areas of coverage. The respondent for the Northern Rhode Island REACT Team, indicated his team's area of responsibility covered five small, geographically close, but not contiguous, Rhode Island and Massachusetts towns. At the other extreme are teams that have defined responsibility for very large areas. In some cases these assumptions of responsibility are necessary because no other teams have been formed. In other cases, there is a rivalry for members, which has been used to justify large, and even overlapping, team areas. These phenomena are pointed out simply to define potential organizational and geographic problems that may have to be resolved before various REACT and ALERT teams can effectively be used in civil preparedness operations.

5. PLANNING FOR EMERGENCY OPERATIONS BY REACT AND ALERT TEAMS

Planning for emergency operations appears to have received relatively little attention from the REACT and ALERT teams surveyed. The level of planning is reflected in the presence or absence of working agreements between teams and the government agencies and other organizations they support. The level of planning is also reflected in the plans and standing operating procedures (SOP) prepared by teams and in the absence of those plans and SOPs.

Of the 133 teams surveyed, respondents for 123 (or 92 percent) reported that their teams had been officially recognized by agencies and organization with which they worked. The respondent for the Monroe County REACT Team, Rochester, New York, indicated that his team was organized and operated by county government. Respondents indicated two teams were in the process of being recognized; and six teams were not recognized. The reasons these eight teams had not been recognized, were not given other than that several of them were recently formed. No information was supplied for one team. Agencies and organizations providing recognition generally included local police and fire departments; county sheriffs' offices and fire departments; local offices of the state police or state highway patrol; various medical organizations, including hospitals, ambulance companies, rescue squads, and other emergency medical services; and American National Red Cross chapters.

The numbers of agencies and organizations reported to recognize individual REACT and ALERT teams ranged from one (reported for 14 teams) to 32 (reported by the respondent for the Northern Lights REACT Team, Delta Junction, Alaska). An average of three to four agencies reportedly recognized the teams surveyed. A more precise estimate is not warranted or feasible because a number of teams did not provide complete lists of local police and fire departments claimed to recognize them. The lists are manifestly incomplete in other respects. For example, 10 teams were reportedly part of the National Weather Service SKYWARN program, but only one team's respondent reported official recognition by the National Weather Service. There are, furthermore, problems involved in assessing the effectiveness of relationships between REACT and ALERT teams and the agencies and organizations with which they cooperate.

Only 25 team respondents (or 19 percent) indicated their teams had formal, written agreements with the agencies and organizations supported by these teams; five additional respondents (or 4 percent) indicated formal agreements were being developed; and the Monroe County REACT Team is a component of the agency it supports. A total of 100 respondents (or 75 percent) reported not having any formal agreements; and two respondents did not provide any information on agreements.

Many of these formal agreements reported for REACT and ALERT teams appear to be questionable. None of the teams claiming formal agreements had agreements with all agencies and organizations they claimed to serve. Most teams claiming formal agreements did not supply copies as requested, making it hard to evaluate those agreements that have been developed. Of the eight questionnaire responses that did incorporate copies, several of the agreements supplied were old, dating to the middle to late 1960s. Several were simplistic, or were only letters stating intent to provide services that were generally ill-defined. Most frequently cited were agreements with the American National Red Cross. Many of the REACT teams citing such agreements actually referred to the standard agreement between the American National Red Cross and REACT International, Inc., as a formal agreement with their local Red Cross chapters. This is contrary to the intent of agreement, which calls for separate agreements

between REACT teams and area and local Red Cross chapters. Where it could be identified, the national Red Cross-REACT agreement was not counted as a REACT team-Red Cross chapter agreement, but it is evident that such misuse of the national agreement could not always be identified.

Of the REACT and ALERT teams surveyed, respondents for 71 (or 53 percent) indicated that they had emergency plans in force. Some of the "plans" cited proved to be the REACT Monitoring Guide. These citations are not included in the count of respondent plans. It is almost certain, however, that other reported plans could not be identified as such, but were, in fact, the Monitoring Guide. In addition to 71 respondents who reported their teams has emergency plans, the remaining respondents fell into the following three categories:

- Plans or SOPs being developed - 8 teams (or 6 percent)
- No plans or SOPs in force or being developed - 43 teams (or 32 percent)
- No information supplied - 11 teams (or 8 percent)

Of the teams for which respondents claimed plans or SOPs, only 16 supplied requested copies, making it difficult to evaluate overall quality. Of those 16, however, two were Channel 9 monitoring procedures and were neither emergency plans nor emergency SOPs; two were in or attached to team by-laws and also primarily covered monitoring procedures; and one was only a single page SOP covering communications discipline and net control. The other 11 plans of which copies were available included several very detailed, team-prepared ones as well as plans prepared by or in conjunction with agencies or organizations served. Few of these 11 plans were fully satisfactory in defining operations in the full range of communications and other activities REACT and ALERT teams could be asked to perform.

In some cases REACT and ALERT team plans and SOPs contained very inventive solutions to team problems. For example, the Franklin County ALERT team, Columbus, Ohio, had developed a blue code; which parallelled the 10-code, so that team members could communicate among themselves, in relative privacy, on Channel 9 while disposing of calls that have came in on that channel. Some

solutions are not nearly so helpful. Several teams had tackled the same privacy problem as Franklin County ALERT and had come up with private 10-codes, which could only confuse CBers and public safety personnel.

Many of the REACT and ALERT teams surveyed provide excellent--even extraordinary--service to local agencies and organizations without ever having formalized the terms of service. This is true especially when the service provided involves receiving calls over Channel 9 (or other CB channels) and relaying them to local public safety and other agencies. It is less likely to be true in providing services during a major emergency. The absence of any formal agreements between 76 percent of the REACT and ALERT teams surveyed and any local agencies and organizations, and apparent inadequacies in some plans and agreements in force, both tend to suggest deficiencies in team capabilities to provide nonroutine support, which should be corrected in any program developed by DCPA to use CB in civil preparedness emergencies.

6. CB RADIO EQUIPMENT AVAILABLE TO REACT AND ALERT TEAMS

REACT and ALERT team members own (or have access to) large numbers of mobile and base stations CB transceivers and some personal portable CB transceivers. Perusal of the responses from individual teams in the sample showed the amounts of equipment owned by members is highly variable. Rather than simply count pieces of equipment, relationships were established between team sizes and amounts of equipment available to team members. These relationships are shown in Table 8-4.

For mobile transceivers, respondents for 48 teams indicated their teams had approximately one transceiver per member, while respondents for 50 teams (or 38 percent) indicated their teams had more than one transceiver per member, and 30 teams (or 23 percent) indicated their teams had less than one transceiver per member. Access to mobile CB equipment appears to be virtually identical for both the REACT and the ALERT teams surveyed. The limiting cases are questionnable. For example, at the upper end of the scale, the respondent for a team with a membership of 42 claimed access to 1,000 mobile

Table 8-4. CB Transceivers Owned by REACT and ALERT Teams

Transceivers/ Team Members	Mobile Tranceivers Number	Mobile Tranceivers Percent*	Basic Station Transceivers Number	Basic Station Transceivers Percent*	Personal Portable Transceivers Number	Personal Portable Transceivers Percent*
More than 80 Percent Greater	1	1	1	1	-	-
50 to 80 Percent Greater	17	13	1	1	-	-
Up to 50 Percent Greater	32	24	5	4	1	1
Equal	48	36	37	28	1	1
Up to 50 Percent Less	23	17	49	37	6	5
50 to 80 Percent Less	6	5	29	22	48	36
More than 80 Percent Less	1	1	6	5	50	38
No Radios	-	-	-	-	22	17
Unknown	5	4	5	4	5	4

n = 133
*Does not add to 100 percent because of rounding

CB transceivers. (This particular team may be counting the number of units it can draw on from unaffiliated CBers in an emergency, since it has had some experience operating in this mode.) As another example, at the lower end of the scale, the respondent for a team with a membership of 127 reported his

team had access to seven mobile CB units. (There appears to be no explanation for the response, unless the units counted belong to the team and not to its members.)

In general, there were fewer base station transceivers than one per team member. This relationship is to be expected, since teams were often comprised of family members who shared a single base station. Table 8-4 indicates that 37 teams had one unit per member, and only seven (or about 5 percent) had more than one unit per member. The table indicates that respondents for 84 teams (or 63 percent) indicated having fewer than one radio per team member. Access to CB base stations seems to be more limited for ALERT teams in the sample than for REACT teams. Respondents for the former reported 12 teams (or 44 percent) had less than one base station per two members, while respondents for the latter reported 23 teams (or 17 percent) fell into this category. The limiting cases were also questionable for CB base station transceivers. In fact, the teams used for examples in the case of mobile transceivers also defined the extremes for CB base station transceivers. At the high end, the team of 42 members, which claimed access to 1,000 mobile units, also claimed access to 200 to 300 base stations; the team of 127 members, which claimed access to seven mobile units, also claimed access to only five base stations.

There are even smaller numbers of personal portable transceivers available to the teams surveyed. Respondents for 48 teams indicated that their teams had fewer than one transceiver per two members, and 50 teams reportedly had a negligible number of personal portables. Respondents for a significant number of teams in the sample (22, or 17 percent) indicated that their members did not own any personal portable CB units. Ownership of personal portable units appears to be virtually identical for both the REACT and ALERT teams surveyed. The relatively low numbers of units in use has some basis in personal portable design and performance, since units of this type tend to be relatively bulky for the one to five channels most of them provide, they have less adequate antennas, and are less able to reject noise from automobile ignitions and electric motors. The relatively small number of units is, nevertheless,

somewhat surprising considering the extensive use made of CB transceivers in search and rescue missions and similar applications necessitating fully portable equipment.

In general, respondents indicated that their REACT and ALERT teams primarily transmitted and received double sideband, amplitude-modulated (AM) signals. In fact, Table 8-5 indicates that 47 of the respondents reported their teams could only transmit and receive AM signals. Many teams had the capability of transmitting and receiving both AM and single sideband (SSB) signals. As indicated in Table 8-5, 77 teams had this capabily. Analysis of questionnaire responses, however, indicates that only 26 teams (or 34 percent of the teams equipped for SSB) had actual uses for their SSB equipment. In addition to operating in the CB Radio Service, respondents indicated that 10 teams could now operate in the General Mobile Radio Service (GMRS), and two additional teams planned to use GMRS in the future. Respondents for teams using or planning to use GMRS indicated that it was used to provide reliable interteam communications; in some instances it also served to provide reliable communications among teams in metropolitan areas.

Table 8-5. Services and Emissions Used by REACT and ALERT Teams

Services and Emissions	REACT Teams n=106	REACT Percentage* n=106	ALERT Teams n=27	ALERT Percentage* n=27	Total Teams n=133	Total Percentage n=133
CBRS - AM Only	36	34	11	41	47	35
CBRS - AM and SSB	53	50	15	56	68	51
CBRS (AM) and GMRS	4	4	-	-	4	3
CBRS (AM, SSB) and GMRS	5	5	1	4	6	5
CBRS (AM, SSB) and GMRS Planned	3	3	-	-	3	2
Not Specified	5	5	-	-	5	4

*Does not add to 100 percent because of rounding

The CB equipment used by the REACT and ALERT teams surveyed was usually located in individual homes and vehicles. Some of the teams surveyed had special monitoring locations, however, which team members staffed. Table 8-6 summarizes the information received from respondents on these special, centralized locations. These locations included team headquarters in five cases, and both a team headquarters and a sheriff's office is a sixth case. (The latter team was also negotiating to install a base station in a local state police office.) In all other cases, equipment had been installed in local police department, fire department, sheriff's office and civil preparedness agency facilities. Most locations were apparently operated on a full-time basis, but at least five locations were staffed only during emergencies. (One of these five is one of two such locations operated by a single REACT team; the team's other location was operated on a full-time basis.)

Table 8-6. Special Monitoring Locations Used by REACT and ALERT Teams

Number and Type of Locations	REACT Teams Number	REACT Teams Percentages* n=106	ALERT Teams Number	ALERT Teams Percentage n=27	Total Number	Total Percentage* n=133
1 Agency	25	24	5	19	30	23
Agency Planned	2	2	-	-	2	2
Team	4	4	1	4	5	4
2 Agency	8	8	-	-	8	6
Agency and Team	1	1	-	-	1	<1
3 Agency	1	1	2	7	3	2
3 or More Agency	1	1	-	-	1	<1
None	64	60	19	70	83	62

*Does not add to 100 percent because of rounding

7. CHANNELS MONITORED BY REACT AND ALERT TEAMS

As indicated by questionnaire responses, a total of 104 REACT teams (or 98 percent of all REACT teams surveyed) monitored Channel 9 (see Table 8-7). Of these, eight teams also monitored Channel 19, and 14 teams also monitored one or more local-use channels. The respondent for the REACT Rescue Team, Logan West Virginia, had encountered so much interference on Channel 9 that it had abandoned its scheduled monitoring activities and was concentrating on performing search and rescue functions. One respondent did not specify the channels monitored by his team.

As shown in Table 8-7, a total of 19 ALERT teams (or 70 percent of those surveyed) also monitored Channel 9 either singly, or in conjunction with Channel 19 or one or more other local-use channels. In addition, respondents for six ALERT teams (or 22 percent) indicated their teams monitored local use channels either by themselves or in conjunction with Channel 19. The respondent for the Mid-Nebraska ALERT Team, Grand Island, Nebraska, indicated that his team's

Table 8-7. Channels Monitored by REACT and ALERT Teams

Channels	REACT Teams	REACT Percentage* n=106	ALERT Teams	ALERT Percentage n=27	Total Teams	Total Percentage* n=133
9	80	75	6	22	86	65
9 and 19	9	8	4	15	13	10
9 and Other	15	14	9	33	24	18
19 and Other	-	-	3	11	3	2
Other than 9 and 19	-	-	3	11	3	2
None	1	<1	1	4	2	2
Not specified	1	<1	1	4	2	2

*Does not add to 100 percent because of rounding

members did not monitor any channel from base stations, but that they did tune to Channel 11 when they were in their vehicles; the reason for this procedure was not given. One other ALERT team respondent did not indicate which channel or channels his team members monitored. There was, finally, a qualitative difference noted between ALERT and REACT responses, which is not apparent from Table 8-7. Respondents for many ALERT teams reported that, while their teams did monitor Channel 9 along with one or more other channels, they gave Channel 9 secondary status and concentrated on either Channel 19 or local-use channels.

Table 8-8 indicates the amount of time various REACT and ALERT teams reportedly spent monitoring CB channels each day. Respondents for a total of 51 REACT teams and eight ALERT teams (or just under one-half of the REACT teams and one-third of the ALERT teams sampled) reported monitoring on a 24-hour basis. The Schuylkill County REACT Team, Pottsville, Pennsylvania, reported achieving a 24-hour schedule in conjunction with the local ALERT team. Four REACT teams

Table 8-8. Duration of Monitoring Periods Reported by REACT and ALERT Teams

Monitoring Periods (Hours/Day)	REACT n=106		ALERT n=27		Total n=133	
	Teams	Percentage*	Teams	Percentage*	Teams	Percentage*
24	51	48	8	30	59	44
20-24	3	3	2	7	5	4
12-20	7	7	2	7	9	7
Less than 12	7	7	1	4	8	6
Other	2	2	-	-	2	2
None	1	1	1	4	2	2
As Monitors Are Available	9	8	5	19	14	11
Not Specified	26	25	8	30	34	26

*Does not add to 100 percent because of rounding

reported they shared monitoring time with local public safety agencies. The respondent for the Emerald City REACT Teams, Greenwood, South Carolina, reported a full-time monitoring schedule for Channel 23 and an unspecified schedule of Channel 9 monitoring. The respondents for six ALERT teams reported they monitored Channel 9 24-hours a day, but the respondent for the Seward ALERT Team reported full-time monitoring of Channel 10, and the respondent for the Barton County ALERT team, Lamar, Missouri, reported full-time monitoring of Channel 11. Only nine REACT teams reported they monitored on a casual basis, as monitors were available, while five ALERT teams reported their members operated on this basis.

8. EQUIPMENT OTHER THAN RADIO EQUIPMENT USED BY REACT AND ALERT TEAMS

Respondents for ALERT and REACT teams also reported having access to 4-wheel-drive vehicles, mobile command/communications centers (MCC), and other specialized equipment. Of the 133 teams in the sample, respondents for 87 (or 65 percent) reported that their teams had access to 4-wheel-drive vehicles. Most of these vehicles were owned by team members, but a few teams reported cooperative arrangements with off-road-vehicle clubs for support. In general, the numbers of vehicles involved were small; 68 of the respondents (or 78 percent of those who indicated their teams had access to 4-wheel-drive vehicles) reported fewer than 10 vehicles. The respondent for the Port City ALERT Team, El Caljon, California, claimed access to 40 off-road vehicles, The largest number reported for the teams responding to the survey.

In addition to 4-wheel-drive vehicles, respondents for 22 teams (or 17 percent) reported their members owned boats and rafts; 15 (or 11 percent) reported their members owned snowmobiles; and 4 (or 3 percent) reported their members owned aircraft. Only limited numbers of boats, snowmobiles, and aircraft were available to the REACT and ALERT teams in the survey. The respondent for the Stanislaus REACT Team, Waterford, California, reported his team members had 20 boats, 15 other respondents indicated having access to fewer than 10 boats, and seven did not indicate the number of boats involved. Respondents for two teams indicated their team members owned six snowmobiles;

three did not specify the number owned; and the remaining 10 indicated having access to one to five of these vehicles. Three of the four respondents reporting the availability of aircraft indicated access to two airplanes; the fourth, to only one airplane.

A number of teams reportedly has access to a variety of trucks. A total of 20 respondents (or 15 percent) indicated that their teams had access to pick-ups and vans. These vehicles appear to belong to team members. The respondents for the Manhattan REACT Team, Manhattan, Kansas, and the Shelby County REACT Team, Shelbyville, Indiana, both reported having access to 13 pickups and vans. Five respondents were not explicit about the numbers of pickups and vans involved; and the remainder indicated that the team had access from one to 12 such vehicles. Three teams also reportedly had access to heavier trucks or to construction equipment. The numbers of teams reporting access to vans and pickups is probably low, since fewer appear in the responses than would probably appear in a survey of the general public. Vans and pickups were not mentioned in the questionnaire, and many respondents do not seem to have counted them among their teams' resources.

More interesting, however, are the specialized vehicles reported. Respondents for 12 REACT and ALERT teams (or 9 percent of all teams) reported having access to the following types of vehicles:

1. Barton County ALERT Team, Lamar, Missouri - 1 fire truck, 1 van with search and rescue equipment
2. Bradley CB Radio ALERT Team, Warren, Arkansas - 1 trailer with emergency medical technicians' (EMT) equipment
3. Brooklyn Area REACT Team, Brooklyn, New York - 1 van with medical supplies, 3 EMT vehicles, 4 first aid vehicles
4. Central Maryland REACT Team, Glen Arm, Maryland - 1 tow truck
5. Ellenburg REACT Team, Altona, New York - 1 tow truck
6. Garvin County REACT, Pauls Valley, Oklahoma - 1 ambulance
7. Gateway Area ALERT Team, Mt. Sterling, Kentucky - 1 ambulance
8. Golden Triangle REACT Team, Beaumont, Texas - 2 ambulances

9. Lincoln and Pike County REACT Team, Elsberry, Missouri - 1 van equipped for fire fighting, rescue, and first aid (used for courtesy patrols)

10. Logan County CB Radio Club, Inc., and REACT Rescue Team, Logan, West Virginia - 1 canteen trailer

11. Oklahoma County Emergency REACT Team, Oklahoma City, Oklahoma - 1 first aid trailer, 1 canteen

12. Stanilslaus REACT, Waterford, California - 2 tow trucks

Whether these vehicles were owned by team members or by teams, how well equipped and maintained they were, and how adequately and responsibly they were used is unknown. Some of them (such as the two canteens, which were almost certainly used primarily to serve coffee for holiday highway safety rest stops) probably belonged to the teams.

A total of 24 respondents (or 18 percent) reported team access to MCCs. Two of these teams reported having two MCCs. An additional MCC was reportedly under development by a team not already equipped with one. In some cases, MCCs were owned by team members, but are available for emergency use; in other cases, the MCCs belonged to the teams, having either been purchased by the team or secured as a donation. Survey respondents generally did not specify the ownership of the MCCs they reported. Some of the MCCs were essentially makeshift. For example, the Edwards REACT Team, Edwards Air Force Base, California, reported it had access to a motorhome equipped with emergency power, which could be pressed into service as an MCC, if needed. Other MCCs had been specifically designed for the purpose. For example, the respondent for the Florida Crown REACT Team, Inc., Jacksonville, Florida, reported that his team's MCC was equipped with radios for the local fire and rescue service. The respondent for the 5-Watt Mountaineers REACT Team, Covington, Virginia, reported his team's MCC had been developed in a 1977 van and included a CB base station transceiver, amateur radio equipment, a remote programming unit for a local radio station, a receiver for local police and fire frequencies, and an emergency generator.

Finally, respondents for 49 teams (or 37 percent) indicated their teams had emergency generators; and respondents for seven teams (or 5 percent) reported their teams owned resuscitators. Interestingly, six of the seven teams with resuscitators are among those reportedly owning generators. Generally, teams reportedly had one generator; but 13 respondents indicated having two to four generators. One additional team reportedly planned to acquire a generator. At least nine of the respondents indicated that their teams had one or more floodlights available for use with their generators. (Four additional respondents indicated their teams had floodlights available for emergencies, but were apparently dependent upon other organizations for emergency power sources.) In addition to generators and resuscitators, many teams reported having a variety of other emergency equipment, most frequently first aid equipment, but including other items such as dragging equipment and wet suits, barricades and signs, and cutting and welding equipment.

The number of teams reporting specialized equipment and the amount and variety of equipment reported suggests that a significant number of REACT and ALERT teams can potentially provide meaningful supplemental emergency services (other than communications) for their communities.

9. ATTITUDES OF REACT AND ALERT TEAMS TOWARD ALTERNATIVE CB PROPOSALS

A series of questions about possible changes in the CB Radio Service to make it more usable for emergency operations brought generally favorable responses from REACT and ALERT team respondents. These responses are summarized in Table 8-9.

A question about increasing the number of channels available to the CB Radio Service obtained favorable responses from 66 of 133 teams. Advocates of additional channels divided approximately evenly between those who wanted to relieve channel congestion and those who wanted to improve emergency communications. In some cases advocates of additional channels appeared to

Table 8-9. Responses of REACT and ALERT Teams to CB-Related Proposals

Proposal	Agree Number of Teams	Agree Percentage	Disagree Number of Teams	Disagree Percentage	No opinion Number of Teams	No opinion Percentage
Need to Increase CB Channels*	66	50	62	47	5	4
Need to Create New Service	75	56	33	25	25	19
Need for RACES-Like Capabilities	81	61	24	18	28	21

n = 133
*Percentages do not add to 100 percent because of rounding

suggest those channels should be outside the existing 40 channels; in other cases, within the existing 40 channels, but reserved for emergency uses. Opponents of channel expansion generally expressed the opinion that the present number of channels was adequate, if the FCC's Rules and Regulations were strongly enforced. In a few cases, respondents who took this position also advocated changing the Rules and Regulations to allocate more of the presently available channels to emergency users, either permanently or in the event of an emergency.

Another question, on the need to create a new service within the Personal Radio Services (such as that proposed for spectrum in the 220 MHz region), brought favorable replies from respondents for 75 of 133 REACT and ALERT teams. Advocates of a new service emphasized the technical characteristics usually attributed to frequency-modulated emissions in the Ultra High Frequency band (28 respondents); saw the new service as an opportunity to relieve problems in the CB Radio Service, to avoid them in the new service, or both (20 respondents); or to provide channels for emergency communications not adequately available in the CB Radio Service (16 respondents). A number of respondents did not explain their support for a new service, or gave a

variety of other explanations not readily categorized. The opponents of a new service generally concentrated on the adequacy of the CB Radio Service, especially if enforcement efforts were intensified (10 respondents); maintained that no service in the Personal Radio Services could be disciplined (four respondents); or expressed the opinion that the new service would be too costly to supplement or supplant the CB Radio Service (four respondents). Again, a large number of respondents either did not explain their opposition or gave miscellaneous answers. As shown in Table 8-9 a significant number of respondents did not express opinions on the desirability of creating a new service.

Finally, a proposal to create a CB capability similar to the Radio Amateur Civil Emergency Service (RACES) was supported by respondents for 81 teams. The explanations given for either favoring or opposing the implementation of such a capability in the CB Radio Service were frequently omitted; those presented suggest that respondents did not fully understand RACES. In general, those respondents who supported the proposal saw RACES as an extension of current REACT and ALERT operations, or as a means of solving problems currently being encountered by REACT and ALERT teams. Those respondents who expressed opposition to the proposal did so because they felt REACT and ALERT teams already provided necessary services, or because they wanted to retain control of REACT and ALERT activities at the community level. A sizeable percentage of respondents did not express either support of or opposition to the proposal.

Chapters II through VII of this report have assessed the evolution of the CB Radio Service, its present use by state and local civil preparedness agencies and by state police/state patrol agencies and the general capabilities of volunteer CB organizations. The current chapter has given detailed information on a sample of REACT and ALERT teams. In the next chapter, this material will be drawn together into a recommended program by which DCPA can stimulate the use of the CB Radio Service in nuclear attack situations as well as in lesser peacetime emergencies.

CHAPTER IX

RECOMMENDED PROGRAM FOR USING THE PERSONAL RADIO SERVICES IN CIVIL PREPAREDNESS OPERATIONS

CB radio is, and is likely to remain, a part of popular culture. CBers and their equipment will, therefore, have a continuing impact on civil preparedness operations as well as on the operations of all the public safety services. In most cases, the impact of CBers and CB transceivers on emergency operations can be controlled, but if control is not exercised, CBers will frequently be a disruptive influence in emergency situations.

While the CB Radio Service and its users can never be a completely disciplined resource, they offer potentially large numbers of people and extensive amounts of equipment, which can be channeled, in many cases, into productive activities. CB, because of its mass appeal, has the potential, furthermore, of making even larger numbers of people aware that civil preparedness organizations exist and operate in the public interest. The mass appeal of CB offers an opportunity to build support for civil preparedness, which has not been available to DCPA, or its predecessor agencies, since the relaxation of Cold War tensions.

This chapter discusses programs which can be implemented by local governments to mobilize and direct CBers and their equipment. This chapter also includes recommendations for a DCPA program to stimulate and guide the development and operation of such local CB programs. The local CB programs proposed can, of course, be implemented by local actions, and various parts of the recommended programs are already in use by many jurisdictions. Encouragement of such programs by DCPA and assistance in implementing them from state civil preparedness agencies will speed their adoption, encourage uniformity, and increase their effectiveness.

While the chapter concentrates on the CB Radio Service, the comments made are also applicable to the General Mobile Radio Service (GMRS), to the extent that it is used to support CB volunteers. The comments are also applicable to any new service added to the Personal Radio Services in the future.

1. LOCAL CB RADIO PROGRAM ALTERNATIVES

Local civil preparedness agencies can exercise positive control over the CB Radio Service and CBers through one of two programs:

1. Minimum CB Program. This program is designed to determine what information (and misinformation) is being transmitted over CB channels, to suppress rumors being passed on those channels, and to respond selectively to reports of damage and injuries and requests for assistance received from CBers
2. Improved CB Program. This program is designed to make active use of CBers and their equipment as sources of communications and other emergency assistance. It is also designed to perform the various functions of the minimum program

Implementation and operation of most minimum CB programs and all improved CB programs involves several activities:

1. Developing a plan for using CBers and their equipment
2. Adopting an existing volunteer CB organization to provide required services, or developing a new organization to do so
3. Training the volunteer CBers to perform the services they are to provide
4. Giving the CBers suitable operational experience so they are proficient in their assigned tasks
5. Assuring that, when an emergency arises, CBers operate under adequate supervision and receive suitable direction from their supervisors

These activities are discussed in greater detail in Chapter VII, Section 1.3.

In some jurisdictions, it may be possible to implement a minimum CB program without using any volunteers. In those cases, the volunteer-oriented activities described above are not required. Planning is, nevertheless, required to develop such staff-based minimum CB programs.

If use of the CB Radio Service is not dealt with positively by means of an organized CB program, then preparations have to be made, alternately, to handle the CBers who show up at virtually any emergency. Steps must be taken

to exclude unauthorized persons with CB radios from emergency locations; CB radios are sufficiently common, however, that a sizable number of persons resident in emergency areas, or otherwise appropriately authorized to be in them, will have CB radios and may well use them. Steps must also be taken to minimize responses to CB-originated calls for assistance; if such calls reach the news media, however, they become difficult to disregard without apparently disregarding the potential safety of lives and property. The CB Radio Service and CBers cannot be disregarded easily.

1.1 MINIMUM PROGRAM

The minimum program requires enough CBers to monitor Channel 9 and other CB channels in local use both to determine information being passed on them and to receive reports of damage and requests for assistance. Jurisdictions in which local law enforcement and other emergency services personnel are equipped with CB transceivers may have adequate coverage of CB channels without using volunteers. In those jurisdictions, a minimum program can be planned and operated without the involvement to volunteers.

If volunteers are used in a minimum program, however, their services can often be obtained by involving volunteer CB groups, such as REACT and ALERT teams, in the program. Where these groups exist, they are set up to monitor CB channels. Some already monitor local-use channels in addition to Channel 9 (see Chapter VIII, Section 7). For those groups that do not already monitor local-use channels, covering them in an emergency will generally not prove difficult. Most REACT and ALERT teams and other volunteer CB groups have established disciplined operations. REACT and ALERT teams and other CB groups also have day-to-day functions similar to the ones they will perform in emergencies, assuring continuing operational experience. Members of existing groups may have to be trained to screen CB traffic for rumors; and their handling of requests for assistance may have to be upgraded to allow for filtering of emergency requests to weed out false or unreasonable ones. Where local volunteer CB groups are not available, or where they are unable or

unwilling to serve, new groups will have to be recruited, trained, and assigned ongoing operational functions as well as emergency ones.

If it becomes necessary to disseminate rumor-correcting information, this function should generally be performed by emergency services personnel or by other public officials, because they can exercise greater authority than can volunteers. The severity of rumor generation and the criticality of suppressing rumors will generally determine the rank and identifiability of the persons who transmit such messages.

In jurisdictions having a 911 emergency telephone capability, the minimum CB program should generally be coordinated with it. Since most 911 systems are designed for routine peak loads, it is often necessary to give volunteer monitors access to call-answering and dispatching personnel through unlisted emergency telephone numbers. Access through such special numbers avoids the congestion likely to occur when members of the general public access police, fire, and other emergency services though the emergency telephone number.

Finally, the minimum program must include actions by local law enforcement personnel to assure that unaffiliated CBers, who can always be expected at the scene of an emergency, are dispersed and do not interfere with emergency operations. Enforcement actions may occasionally have to be taken against CBers who commit malicious acts such as intentionally transmitting false hazard or threat reports or making false requests for assistance.

1.2 IMPROVED PROGRAM

The improved CB program requires volunteer CBers to perform the functions of the minimum program plus other communications and noncommunications support functions. The amount of support required and the number of volunteers available to provide it must be determined when such an improved CB program is planned.

In establishing an improved CB program, preference should be given to using existing volunteer CB groups such as local REACT and ALERT teams and parti-

cipants in Community Radio Watch (CRW) programs. CRW programs have the advantage of teaming CBers with radio amateurs and business radio users to accomplish necessary functions. Where CRW programs are not available, CBers can be teamed with radio amateurs by local civil preparedness authorities.

While emphasis should generally be upon CBers performing communications functions, volunteers now perform enough other functions in emergencies that they can also be considered as potential resources for noncommunications activities (see Chapter VIII, Section 3). Care should be taken, however, to avoid assigning functions to CBers not suited to their capabilities or not compatible with the capabilities of CB transceivers. If CBers are teamed with radio amateurs and business radio users, moreover, the technical skills and equipment available from the teaming can be used to overcome some of the limitations involved in CB operations. CBers (and other volunteers) should also not be assigned to functions for which adequate professional personnel and agency equipment are already available.

Possible communications functions to be assigned to CBers, in addition to those of the minimum program, include providing communications for various emergency components lacking them; replacing telephone services lost because of outages; and relaying information to members of the public in CB-equipped vehicles. In a peacetime situation, this effort may be applied to handling health and welfare traffic into and out of the area impacted by an emergency. In a crisis relocation situation, CBers may be used to provide communications between local emergency operations centers (EOC), congregate care centers, and work parties. In a nuclear attack situation, surviving CB communications capabilities may be applied to handling communications between shelters and local EOCs. The use of CB transceivers is, unfortunately, problematic in a transattack and postattack situation since they may be damaged by electro magnetic pulse (EMP), and temporary damage to the ionosphere may interfere with propagation.

Noncommunications support functions assigned to CBers in a peacetime emergency may include observing and reporting damage and relaying requests for assistance, administering first aid and driving makeshift ambulances, assisting with traffic

control, helping to provide perimeter security, and patrolling to prevent looting. In a crisis relocation situation, assignments may include assisting motorists on relocation routes and directing newly arrived persons to their relocation destinations. In a nuclear attack situation, support assignments may include disaster-type functions as well as monitoring and reporting fall-out intensities.

All of the communications and support functions that can be assigned require training before CBers can perform them. The communications functions require that CBers learn communications practices that encourage discipline and are compatible with those used by other emergency services components. Noncommunications support functions require that CBers learn how to perform the activities required of them. In some cases these noncommunications functions (notably giving first aid and monitoring radiation levels), involve highly specialized skills.

Because the volunteers in an improved CB program are actively involved in emergency operations, they are obviously subject to much greater stress than they would be in a minimum CB program. It is important, therefore, that they have adequate opportunities to practice their assignments (and any special training associated with them). Practice should occur, whenever possible during situations imposing relatively low stress levels on volunteers. These situations build familiarity with assignments and unify volunteer participants among themselves as well as with other emergency services personnel. In fact, the day-to-day services performed by REACT and ALERT teams or by participants in CRW programs provide good bases for such ongoing operational experiences.

The conditions for controlling CB volunteers in the improved program are established continuously during training activities and during actual low stress operations. This approach allows weeding out of those volunteers who cannot or will not conform to acceptable standards of performance. These standards generally should require that volunteers not report for service unless called and should require that they leave an operational area when their services are no longer needed. Because of the availability of a trained corps of volunteer CBers, it becomes possible, if necessary, to absorb some unaffiliated volunteers into emergency operations.

Because CB channels are in active use in an emergency, an improved CB program must include provisions for exercising discipline over channel use. While steps should be taken to secure long-term relief through the FCC (see Section 2.4, below), short-term measures are already available. Approaches that have been taken in various areas around the country include:

1. Providing advanced notice in newspapers and on radio and television of CB channels planned for local emergency use
2. Repeating CB channel-use information periodically during actual emergencies over radio and television, and requesting persons in the area to keep those CB channels clear
3. Transmitting over CB channels an announcement, by high-level emergency services or government officials, that an emergency is in progress, and requesting that the channels involved be cleared for emergency use
4. Retransmitting this announcement periodically to assure that CBers entering the area of an emergency are aware of the emergency and do not accidentally use cleared channels
5. Contacting CBers who use temporarily cleared channels or create cochannel or adjacent channel interference on emergency cahnnels

Contacts with CBers using temporarily cleared emergency channels or creating interference on them can often be made over the CB channels, themselves. In some instances contacts have been made by telephone; occasionally long distance calls have been required to silence accidental interference caused by skywave propagation. In a few instances, local emergency services personnel, or CBers, have visited offenders to silence interference. The use of CBers for this function is questionable, however, because of the animosity potentially created. Obviously the amount of time and effort spent clearing emergency channels or keeping them clear is a function of the severity of the emergency involved, the availability of persons to undertake the effort, and the criticallity of CB to operations in the emergency.

Those unaffiliated volunteers who are not integrated into emergency operations should be dispersed by local law enforcement personnel so they do not interfere with emergency operations. Enforcement actions may have to be

taken against those CBers who commit malicious acts such as intentionally transmitting false reports or making false requests for assistance.

Neither the minimum CB program nor the improved CB program can guarantee the absence of CB-caused problems. The minimum CB program provides a basis for detecting and limiting such problems in communities that implement it; the improved CB program, for making the CB Radio Service and volunteer CBers a positive asset in emergency operations in those jurisdictions that have established it. In some emergency operations, these programs may not be successful, and CBers will be a disruptive influence despite plans and preparations. In many cases, however, these programs will either neutralize certain liabilities or mobilize new resources in support of civil preparedness operations.

The following sections describe a program by which DCPA can stimulate implementation of CB programs by local civil preparedness agencies.

2. DCPA ACTIONS FOR ESTABLISHING EFFECTIVE PERSONAL RADIO SERVICES PROGRAMS

DCPA can provide a major impetus toward making effective emergency use of the CB Radio Service and other services in the Personal Radio Services. If DCPA chooses to do so, it should initiate a number of actions. These are described in the following sections.

2.1 COMMITMENT TO USING THE PERSONAL RADIO SERVICES IN CIVIL PREPAREDNESS OPERATIONS

A commitment to using the CB Radio Service in civil preparedness operations is necessary to initiate DCPA efforts to develop a CB program within the agency, and to stimulate development of parallel programs at state and local levels of government. Such a commitment should also involve the GMRS and any new service developed within the Personal Radio Services.

To initiate this effort, DCPA should designate a full-time employee as responsible for developing and implementing the program. This employee should be a GS-12 or GS-13 because he will have to make decisions on his own, but will not

have any significant number of staff to supervise. In addition, DCPA's program manager should be (1) experienced in communications planning and operations, (2) familiar with civil preparedness programs, and (3) sympathetic toward and knowledgeable about the public service activities undertaken by CBers, especially those sponsored by such organizations as REACT and ALERT. He should have adequate secretarial-clerical support.

In addition, personnel in the DCPA Regions should be assigned to support efforts to develop DCPA's CB program. Initially, and for the immediate future, such commitments will involve small amounts of time from field representatives, On-Site Assistance program personnel responsible for local-level civil preparedness planning, and U.S. Army Communications Command (USACC) personnel. Any expansion of this limited commitment should be contingent upon the demonstrated success of the program both in terms of mobilizing CBers and their equipment, and in encouraging overall public support of civil preparedness efforts.

In order to help assure the effectiveness of DCPA planning for CB use, close liaison should be established with all parties actively involved in related activities. Included among these are the Federal Communications Commission (FCC); the National Highway Traffic Safety Administration (NHTSA), Department of Transportation (DOT), which is responsible for the National Emergency Action Radio (NEAR) program, and other DOT components such as the National Highway Administration and the U.S. Coast Guard, both of which currently have limited CB programs; and the National Weather Service, which is responsible for the SKYWARN program. In addition, it is appropriate for DCPA's CB program manager to establish liaison with the Electronics Industry Association, which has been a primary promoter of CB use; REACT and ALERT; the U.S. Citizen Radio Council (USCRC), which is concerned with effective regulation of the CB Radio Service; and possibly Motorola Communications and Electronics Inc., whose Automotive Products Division sponsors the Community Radio Watch. (Involvement with the latter organization involves some problems. First, it is a commercial organization; and, second, CRW is currently a program lacking the management features necessary to create a cohesive national organization.) These liaison contacts will have to be expanded if additional organizations become seriously involved in emergency uses of the CB Radio Service.

2.2 EXTENSION OF NEAR PROGRAM; MONITORING OTHER DEPARTMENT OF TRANSPORTATION PROGRAMS

The NEAR program being implemented by the National Highway Traffic Safety Administration is an excellent vehicle for developing an emergency CB capability. (This program is described in Chapter IV, Section 2.) The NEAR program has already stimulated planning for highway safety applications of the CB Radio Service in a number of states, has resulted in full-scale implementation in Illinois, and will have an increasing impact on state and local public safety agencies in the future.

The NEAR program initially requires participating states to develop plans for using CB. This approach establishes overall control and management of the program by state government. This approach is compatible with DCPA's approach to program control. The NEAR program also has a strong local component based upon local participation in program planning and implementation, which is also compatible with DCPA programs. The NEAR program provides funds to acquire high quality CB equipment deployed in emergency services agencies.

NEAR makes use of volunteer CB resources, placing emphasis upon REACT and ALERT because they are national organizations, have state-level components, and assure a certain level of uniformity and discipline from locality to locality. The NEAR program, itself, appears likely to impose additional discipline by encouraging REACT and ALERT teams to minimize overlaps in the areas they service.

While the NEAR program is dedicated to improving emergency medical services, police traffic services, debris hazard control, and school bus safety, it already accepts participation by local civil preparedness agencies. The emphasis NEAR places upon training for and conducting day-to-day operations assures team continuity and assures that CBers are ready to perform in the event of a major peacetime emergency or nuclear attack situation. In this context, the involvement of state police/state patrol agencies as well as local sheriffs' offices and police departments is likely to impose discipline upon nonaffiliated CBers who may be somewhat less likely to interfere in

emergency operations if their actions are monitored by state and local police. The involvement of these agencies, furthermore, provides logical ties with public safety agencies normally active in civil preparedness emergencies. These ties are particularly strong in crisis relocation situations because of the need to move large numbers of people in their motor vehicles.

It is highly appropriate for DCPA to expand on the foundation laid by NHTSA for the routine operation of the NEAR program into peacetime and wartime civil preparedness emergencies. In fact, the present NEAR program is adaptable to the proposed minimum CB program with little or no changes. Discussions with NEAR program management suggests that NHTSA will be amenable to developing a memorandum of understanding with DCPA for such expanded operation of the NEAR program.[1] Indications are that NHTSA may impose only one major constraint on DCPA participation in NEAR: a state's participation in NEAR cannot be contingent upon its agreement to develop a NEAR civil preparedness component.

DCPA's CB program manager should undertake negotiations with NHTSA at the earliest feasible time to develop the necessary agreement for participation in NEAR. Because of the potential impact of such an agreement, all other CB-related activities should await the outcome of this agreement.

Upon completion of negotiations with NHTSA, the activities described in the following sections should be carried out. If the negotiations are successful and lead to expansion of the NEAR program to cover civil preparedness operations, the activities described will obviously be oriented toward development of a NEAR-compatible program. If the negotiations are unsuccessful, the activities described will be oriented toward developing an independent DCPA program for using the CB Radio Service and CB volunteers in emergency operations.

In addition, DCPA's CB program manager should monitor the development of the U.S. Coast Guard program to install CB transceivers in Search and Rescue stations around the country. He should also monitor Federal Highway

[1]Meeting with Joseph Bernard, Emergency Medical Services Division, NHTSA, October 31, 1977.

Administration efforts to develop in-vehicle communications systems. He should attempt to influence CB-related activities undertaken by either of these agencies to accommodate civil preparedness requirements.

2.3 DEVELOPMENT AND IMPLEMENTATION OF PLANS FOR EMERGENCY USE OF THE CB RADIO SERVICE

It does not appear appropriate to develop a full emergency service in the CB Radio Service similar to the Radio Amateur Civil Emergency Service (RACES) in the Amateur Radio Service. The amount of spectrum available in the CB Radio Service is limited. The number of CBers sharing the spectrum is extremely high, and a few undisciplined ones can have a desruptive impact even in emergency situations. Finally, the characteristics of the spectrum and regulatory limitations on CB equipment essentially restrict the service to local use. Instead, a simpler approach is recommended. It involves state coordination of planning efforts to assure that emergency CB plans for adjacent jurisdictions do not conflict with each other. If the DCPA effort is combined with the NHTSA effort on NEAR, it appears that modest alteration of the state-level NEAR planning activity can accommodate state-level planning for civil preparedness operations. Detailed planning for emergency operations should be accomplished at the local level, possibly requiring somewhat more effort than is involved in preparing local-level NEAR plans. To the extent possible, information should be shared among various state- and local-level civil preparedness organizations to minimize the amount of material prepared by any agency. In order to get these state- and local-level CB planning efforts in motion and to guide them to successful completion, DCPA should develop detailed plans, policies, and guidance for its involvement with the CB Radio Service. If DCPA has merged its efforts with the NHTSA NEAR program, then DCPA's plans will supplement the NHTSA planning efforts.[1] All of DCPA's efforts should be the responsibility of its CB program manager. Some activities may be assigned by him to DCPA Region personnel or to USACC. Some activities may be undertaken cooperatively with NHTSA or inconjunction with volunteer activities of REACT and ALERT.

[1] NHTSA, Citizens Band Communication Manual, Addendum II to Highway Safety Program Manual No. 11, September 1976.

Required planning activities include:

1. Management. Defines the management functions that must be performed by state and local civil preparedness agencies to develop and maintain effective CB capabilities

2. State and Local Organizations. Specifies the organizational structures best suited to effective management and operations of CB radio at various levels of government; specific consideration should be given to means of providing for the exchange of information among various organizations using CB and for pooling efforts to produce materials for use by a number of these organizations

3. Missions. Identifies the missions CB groups should undertake in response to the needs of the governments they are supporting

4. Equipment. Provides guidance for CB equipment acquisitions, including coordinating personal equipment acquired by volunteers with equipment procured by the agencies being served

5. Incentives. Develops effective incentives for CB group participants including training, competitions, awards and honors, publicity, badges, and certificates

6. Training and Exercising. Develops training and exercising methods and materials for both communications skills and operational capabilities

Some of these efforts exceed current NEAR capabilities; if a cooperative effort is undertaken with NHTSA, future planning efforts can potentially accommodate both DCPA and NHTSA needs. Because of the limited availability of staff, it will be necessary to undertake these activities in a time-phased manner over a period of several years.

A series of CB documents and manuals should be prepared, incorporating guidance to both civil defense organizations and the CB groups involved. Several basic documents are needed:

1. Emergency CB Brochure. A simple brochure on CB use in emergencies, it will serve as a basic handout to explain the functions of CB in civil preparedness emergencies

2. Basic Operations. Shows how CB fits into the overall operations of civil preparedness agencies during nonemergency situations, peacetime emergencies, crisis relocation, and a nuclear attack situation

3. Organizations. Describes ways to organize CB groups to serve the various needs of the agencies involved

4. Recruitment, Motivation, and Discipline. Explains how to attract CBers, either for initial operations or to replace those who are no longer active; how to motivate them to perform; and how to establish discipline

5. Training and Exercising. Deals not only with instruction and drills, but also with simulation exercises

6. Planning. Shows how to develop a CB communications plan for a particular state, county or local government

7. Selection and Acquisition of Equipment. Discusses CB equipment selection and federal matching funds programs

If the DCPA program is based on the NEAR program, guidance material for it may be derived from NEAR guidance. Where NEAR lacks suitable material, it may be feasible to develop it jointly. Since several of the above items are critical to getting CB capabilities into operation, it may be necessary to develop provisional guidance and to revise it as more detailed planning is completed. Provisions must be made to update periodically the material produced.

As the DCPA CB program becomes operational, it will be necessary to perform the routine functions necessary to maintain it. These include record keeping and program assessment, the focus of which should be developing information on the functions CB is performing and how well it is meeting the demands placed upon it. Record keeping is required to keep abreast of the status of state and local volunteer CB groups and to maintain mailing lists by which officers of CB groups can be reached. Many of these routine functions, expecially those involved in record keeping and program assessment, are already provided for in the NEAR program. While these NEAR components are generally overly complicated they can be adopted for DCPA use if a joint NHTSA-DCPA program is developed.

It will also be necessary for DCPA to respond to calls for administrative, technical, and operational guidance. Generally, these kinds of assistance will be provided by USACC personnel at DCPA Regions or by volunteers proximate to the organizations requesting assistance. (Presuming the successful negotiation of an agreement with NHTSA on NEAR, some assistance may also be available from NHTSA.) Finally, it is necessary to maintain federal guidance up to date,

reviewing and revising it when changes take place in the situations with which CB must deal.

2.4 PARTICIPATION IN CHANGES TO FCC RULES AND REGULATIONS FOR THE PERSONAL RADIO SERVICES

As a high priority action, DCPA's CB program manager should undertake discussions with FCC members and staff oriented to resolving those emergency-use problems of the CB Radio Service stemming from the Rules and Regulations in force for the service. The DCPA program manager should participate in discussions leading to the possible implementation of a new service within the Personal Radio Services. Discussions about a new service should be focussed on incorporating adequate emergency-use provisions into the Rules and Regulations for the new service. DCPA should also participate in those rulemaking proceedings for the Personal Radio Services that have an impact on the emergency use of the service. The DCPA manager, in conjunction with DCPA General Counsel, should be responsible for preparing agency responses.

Several aspects of the Rules and Regulations for the CB Radio Service need attention:

1. Traffic on Channel 9
2. Creation of additional emergency channels
3. Clearing channels for emergency traffic
4. Enforcement of discipline in emergencies
5. Continued operation in a national emergency

Possible resolutions of these problems are discussed below. All suggested changes are oriented toward (1) assuring that adequate numbers of CB channels are available in emergencies threatening lives and property; and (2) increasing the level of discipline on those channels.

Many suggestions were made to allocate emergency channels (outside the 40 available to the CB Radio Service) and to make them available only to emergency services agencies, to volunteer CB groups, or to both. Suggestions were

also made to allow emergency services agencies and volunteer CB groups to use higher powered transmitters in emergency operations. Both of these suggestions were considered and rejected. The allocation of special frequencies outside the normal CB Radio Service involves the development of special equipment; use of old crystal-controlled equipment, which is in limited supply and obsolete; or use of amateur radio equipment. All of these approaches increase the cost of operation, limit participation to those with special equipment, and create enforcement problems. These problems appear to negate any benefits that would result from allocating such out-of-band channels. The use of higher power transmitters was also rejected because it would create enforcement problems and would also cause interference with other emergency and nonemergency uses of CB.

Some of the recommended changes to the Rules and Regulations are contrary to current FCC thinking and may be unpopular with licensees. To gain satisfactory essolutions in such matters, DCPA's CB program manager must, therefore, be able to mobilize the full weight of DCPA in discussions with FCC members and staff and in formal responses in FCC rulemaking proceedings. If DCPA and NHTSA develop a joint program, efforts should be made to mobilize active NHTSA support for changes to the Rules and Regulations. It also appears appropriate to seek support for such changes from REACT, ALERT, and USCRC, when their support is appropriate.

Use of Channel 9 both for emergency communications affecting the safety of lives and property, and for communications necessary to assist travelers creates serious operational problems. Specifically, REACT and ALERT teams monitoring Channel 9 report that emergency calls have to contend with trivial ones and that emergency calls are missed (and lives are lost) because of the contention. The problem is further compounded by the tendency of many Channel monitors to use the channel both to receive requests for assistance and to coordinate over it among themselves in the process of responding to those requests. Some tendency has also been noted for public safety agencies, generally small police forces, to use Channel 9 for internal communications,

especially when they share public safety frequencies with larger police departments.

The actual severity of Channel 9 problems is unknown, however, because no one has measured and evaluated the traffic on Channel 9. It appears appropriate that a study of Channel 9 use be undertaken upon which to base changes. REACT and ALERT statements on problems with Channel 9 are sufficiently emphatic, however, that it appears desirable, as a minimum, to reserve one additional channel for emergency traffic affecting the safety of lives and property. This channel should probably be in the newly added 17 channels, because traffic on those channels has not yet reached the level of the original 23 channels. Action on this proposed reservation should be undertaken promptly before traffic on the new channels increases, and the proposal provokes concerted opposition. While there is unlikely to be major organized opposition to such a proposal at the present time, the proposal is contrary to declared policy of the FCC not to reserve any additional CB channels for special purposes.

Again, if REACT and ALERT assessments are correct, serious consideration should also be given to separating travelers aid communications on Channel 9 from emergency communications and relocating the former to another channel in the original 23-channel allocation. The separation of travelers aid communications from emergency traffic on Channel 9 is also contrary to current FCC policy. In contrast to the proposal to set aside an additional emergency channel in the upper 17 channels, the proposal to create a new motorist-aid channel is likely to provoke strong opposition because it would impose an additional constraint on the most crowded portion of the CB band. It may also create severe enforcement problems. Creation of a motorist aid channel would, however, vastly ease problems with using the present Channel 9 for life- and property-threatening situations ranging from automobile accidents and house fires to major natural and man-caused disasters.

An even more important capability for civil preparedness operations is being able to clear CB channels (other than Channel 9) when they are needed to handle emergency traffic. While most CBers will give up a channel when they realize

an emergency is in progress, a few do refuse and can make emergency communications difficult. Except for limits on the length of time that CBers can use CB channels (see Chapter II, Section 1.3), there is no requirements for CBers to vacate channels being used to handle emergency traffic.

It appears appropriate, therefore, to amend the Rules and Regulations for the CB Radio Service so that high-level emergency services officials (police chiefs, sheriffs, fire chiefs, and civil preparedness directors) can declare an emergency and temporarily clear several CB channels. A number of safeguards should be built into such a provision to protect the interests of CBers:

1. Emergencies subject to this provision should clearly involve a number of people and the impacted area should be sizable
2. Automobile accidents, house fires, and other limited emergencies should be excluded because they can generally be handled in Channel 9 (especially if an additional channel is reserved for emergency traffic)
3. The number of channels cleared should be limited to a predetermined maximum number (perhaps four)
4. The time during which the channels remain cleared should be limited to a predetermined maximum period (perhaps one week)
5. Provisions should be included for notifying both CBers in the area and those who pass through, as well as for informing the FCC
6. Severe penalties should be imposed on CBers who repeatedly and willfully intrude on the cleared channels

Every effort should be made to prevent emergency services agencies from using emergency channel clearance provisions to usurp channels on a continuing basis. For example, it should be illegal simply to declare a continuing series of emergencies. Penalties should be included to prevent such actions. Finally, it may be appropriate to preassign in state CB plans channels to be cleared in emergencies so that regional emergencies do not result in conflicting channel usage.

A number of suggestions have been made for improving the enforcement of CB Rules and Regulations. These most frequently involve increasing the number

of FCC staff members available for enforcement efforts. Often suggestions have been made to reimpose license fees and to apply the revenue to increasing the size of the FCC enforcement staff. Other suggestions involve delegating enforcement authority to state and local government and providing organized procedures by which volunteers can screen and report violations to the FCC for action. All of these proposals, while they could improve overall use of the CB Radio Service, are essentially beyond the scope of DCPA's concern with emergency operations. It does appear appropriate, however, for DCPA's program manager to work with FCC members and staff and with other interested parties to develop means of enforcing Rules and Regulations on emergency operations (including use of Channel 9).

Various means of enforcement appear feasible for these limited, but critical, situations. Because of the heavy involvement of various public safety agencies using CB, it might be appropriate to delegate enforcement authority to state police/state patrol agencies and to local sheriffs' offices and police departments. The form of the delegation must be resolved. The appropriate public safety agency could issue violoation notices for the FCC; or it could issue citations under applicable state laws or local ordinances. In conncection with the latter approach, it has been suggested that willful intrusions on emergency traffic be considered the same types of violations as if they occurred on party-line telephone circuits.

Clearly FCC action is required to initiate such delegations of authority. In addition, Congressional action may be required to authorize the necessary delegations. State legislation and local ordinances may also be required to complete the process. While there are obvious complexities involved, it appears appropriate to explore these possibilities with the goals of improving control over CB channels in emergencies and increasing the overall discipline of the CB Radio Service.

Finally, some concern has been expressed by state and local civil preparedness agencies over Section 606 of the Communications Act of 1934. This section of the Communications Act allows the termination of unnecessary or harmful

communications when the president of the United States declares the existence of a state of war, a threat of war, or other national emergency.[1] Under these circumstances, use of the CB Radio Service would normally be prohibited.

It is appropriate, however, to negotiate for the exclusion of the CB Radio Service from the provisions of Section 606. First, a simple prohibition against using CB is not likely to be any more effective than efforts to prohibit the use of the public telephone system in emergencies. Use of CB channels despite prohibitions is particularly likely during crisis relocation because of the stress of the situation and the ready availability of mobile CB transceivers in relocating vehicles. Second, the CB Radio Service uses only a small portion of available spectrum; its continued civilian use is unlikely to impede defense operations. Third, the ability of members of the public to communicate with each other and with authorities via radio is particularly useful in the event that the civilian population is relocated. Finally, availability of the CB Radio Service during wartime emergencies assures continuity and increases the probability that the service will be adopted and used during peacetime emergencies.

Because of the criticality of crisis situations involving relocating risk area populations to host areas and of nuclear attack situations, it appears desirable to inhibit as much nonessential use of the CB Radio Service as possible. Under crisis relocation or nuclear attack conditions, therefore, it is appropriate to limit use of all CB channels to communications affecting the safety of lives and property and to communications necessary to assist relocating motorists in reaching their host area destinations. While these restrictions will not inhibit all nonessential communications, for the same reason that use of CB channels cannot simply be banned, such restrictions will probably effectively, perhaps markedly, reduce the amount of nonessential CB traffic.

The proposed modifications to the Rules and Regulations governing the CB Radio Service should increase the effectiveness of the service as a means of emergency

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[1] FCC, Communications Act of 1934 with Amendments..., updated to 1974, Sec. 606(c).

communications. Similar provisions should also be developed for any new service in the Personal Radio Services authorized by the FCC in the future.

2.5 COORDINATION WITH TRUCKSTOP OPERATORS

To the extent that DCPA develops a program for using truckstops in crisis relocation efforts, the agency should also make provisions to use truckstop CB equipment and landline communications for disseminating messages to all those persons relocating and, in critical situations, for reaching specific individuals. Provisions should be included in plans for truckstops to route messages from state and local agencies to truckstops via landline systems, particularly those based on Western Union's Telex system. Truckstop personnel should be familiarized with their emergency communications functions. Finally, volunteers or persons being relocated should be identified to assist truckstop personnel with these communications functions.

2.6 COST AND MANPOWER IMPLICATIONS

Assuming the DCPA CB program manager is a GS-12 (at $ 25,000 per year) and that he requires half-time secretarial-clerical support from a GS-4 employee (at $ 5,000 per year), the proposed program can be initiated and operated for an estimated total cost of less than $100,000 per year, including the small amounts of time applied by DCPA Regional personnel and USACC personnel, travel and communications, and supplies and duplication. Precise figures cannot be developed because estimates of the cost of DCAP Region and USACC personnel are not available. They are assumed to be minimal; no additional staff personnel are called for, and time commitments for present staff members are expected to be obtained by readjusting ongoing assignments to accommodate the new program. Any expansion to accommodate the new program beyond the initial level should occur only if the program significantly improves emergency operations and increases public support of overall civil preparedness activities.

Given the limited commitment required to implement a DCPA CB program, the potential benefits from using CBers and their equipment in emergencies, and the high probability of being able to limit and control problems involved in such a program, it appears highly appropriate for DCPA to initiate development of the proposed program.

CHAPTER X

EVALUATION OF TRAVELERS INFORMATION STATIONS FOR USE IN CIVIL PREPAREDNESS EMERGENCIES

Travelers Information Stations (TIS) provide a means of communicating with members of the public in their vehicles. TIS systems resemble CB transceivers in this respect. TIS systems differ from CB technology, however, in several important respects: (1) they do not require special equipment in vehicles; (2) stations are under government control; and (3) motorists can only receive information. The ability for civil preparedness and other emergency services agencies to communicate with people in vehicles is of considerable interest. The following sections describe the technical and regulatory characteristics of TIS systems; current applications of these systems and possible use of them in civil preparedness emergencies (including problems in that use); and a program by which DCPA can encourage the use of TIS systems in emergencies.

1. BACKGROUND

Radio-delivered advisory messages were first used to communicate with motorists in 1940 when such transmissions were used to tell them which of three exits to take off of the new George Washington bridge between New Jersey and New York City. The technique did not gain acceptance, however, and no additional applications of it appear to have been made until the 1960s, when experiments were undertaken to evaluate the utility of transmitting advisory information to drivers by radio. Practical applications first occurred in the 1970s. For example, following the 1971 San Fernando earthquake, the State of California used radio messages delivered by TIS units to give road information to motorists, and the Montana Highway Commission began to use radio messages also transmitted by TIS units to tell drivers in rest areas about points of interest, available lodgings, public events, and other similar items of concern. During the 1970s additional TIS installations occurred. Most of these installations were in national parks and monuments and on other federal lands used

for recreation. The Interdepartmental Radio Advisory Committee (IRAC), which makes frequency assignments to federal agencies, was more willing to authorize TIS systems than was the Federal Communications Commission (FCC), which is responsible for granting licenses to nonfederal applicants. The FCC authorized several TIS systems on experimental licenses.

In 1975, the FCC initiated rulemaking proceedings on TIS.[1] Opposition to the TIS concept came from the broadcasting industry, which maintained that its members already provided the same services as TIS systems and that its members would suffer adverse economic impacts if TIS systems were authorized. Support for the concept came from state and local governments (often from civil preparedness agencies), business associations, equipment manufacturers, and the travel and recreation industry.

TIS rulemaking proceedings were concluded in 1977 with the formal establishment of Rules and Regulations governing TIS systems.[2] A number of limitations were imposed on TIS licensees specifically in response to the objections of the broadcasting industry. No specific provisions were included in the Rules and Regulations to accommodate civil preparedness operations. Formal acceptance of the TIS concept and promulgation of TIS Rules and Regulations, even with restrictions, is likely to increase the number of TIS installations. Some of the restrictions on TIS stimulated by the broadcasting industry, however, may reduce the number of TIS installations and limit their utility to civil preparedness operations. Omission of specific provisions for using TIS

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[1] FCC, Stations in Local Government Radio Service, Notice of Proposed Rulemaking on Docket No. 20509, FCC 76-672, 40 FR 25601, June 17, 1975.

[2] FCC, Amendment of Parts 2 and 89 of the Rules to Provide for the Use of Frequencies 530, 1606, and 1612 kHz by Stations in the Local Government Radio Services for the Transmissions of Certain Kinds of Information to the Traveling Public..., Report and Order on Docket No. 20509, FCC 77-414, June 10, 1977.

systems in civil preparedness emergencies may also reduce their utility in emergencies.

Appendix F contains a partial list of TIS installations.

2. TECHNICAL AND REGULATORY CHARACTERISTICS

TIS systems consist of low-powered transmitters, and their associated antennas, power supplies, protective housings, program-input sources, and other support devices. The most common support devices are highway signs telling motorists that they are approaching a TIS, the type of information it furnishes, and the frequency on which it is transmitting, and telling them, later, that they are leaving TIS coverage. Other support devices include sensors to detect conditions to be communicated by the TIS system and feedback facilities to indicate whether the TIS system is operating properly. While all TIS systems include signs indicating their existence, sensors and feedback circuits are included in only the most sophisticated TIS systems.

2.1 AUTHORIZED LICENSEES, FUNCTIONS, AND LOCATIONS FOR TIS SYSTEMS

Travelers Information Stations are licensed in the Local Government Radio Services. Eligible licensees include territories, possessions, and states and their subdivisions including counties, cities, towns, districts, and authorities. Specific reference is made to licensing state and local park authorities to operate TIS systems. In addition, the federal government, through the Interdepartmental Radio Advisory Committee, can license its agencies to operate TIS systems.

TIS systems can be used to "transmit noncommercial voice information pertaining to traffic and road conditions, traffic hazard and travelers advisories, directions, availability of lodging, rest stops and service stations, and descriptions of local points of interest."[1] Businesses, except for air,

[1] *Ibid.*, Appendix C, p.2

train, and bus carriers, cannot be identified by name, but can only be described generically (for example, "Exit 8 Eastbound has four service stations and two motels"). Carriers can, however, be identified by name to facilitate announcements about arrivals and departures and about parking areas of air, train, and bus terminals.

TIS systems are restricted to areas frequented by travelers. These include "air, train, and bus transportation terminals, public parks and historical sites, interstate highway interchanges, bridges and tunnels."[1] Normally a TIS includes only one transmitter, but a system of stations can be authorized, if a licensee has demonstrated a need for such a multiple-transmitter installation. A specific prohibition exists, however, against a licensee's setting up a network of TIS units along a highway to attract listeners on a continuous basis.

2.2 FREQUENCIES AUTHORIZED

TIS systems transmit amplitude-modulated (AM) signals on either 530 kHz or 1,610 kHz. These frequencies are immediately below and above the standard AM broadcast band. The signals are received on conventional vehicular receivers, most of which tune to the TIS frequencies.

Authorizations to operate TIS systems are granted on a secondary, noninterfering basis. Except for TIS systems, the 530 kHz frequency is used only by federal government agencies. The 1,610 kHz frequency is in the 1,605-1,715 kHz band, which is allocated to the Aeronautical Radionavigation, Fixed, Land Mobile, and Maritime Mobile and Radiolocation Services. Both frequencies are adjacent to frequencies allocated to commercial AM broadcasting stations. Because they are granted on a secondary basis, TIS licensees must tolerate interference from the primary licensees; furthermore, TIS licensees are permitted to operate only if they do not cause harmful interference to primary

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[1] Ibid. Appendix C, p.3.

stations. *Interference* created by any TIS system to any cochannel or adjacent channel user can result in the immediate suspension, modification, or withdrawal of that station's authorization to operate.

Particular care is taken to assure that TIS systems do not interfere with broadcasting stations. No TIS transmitter site can be located within 15 kilometers from the daytime protected contour of any broadcasting stations operating on an adjacent channel (540 kHz or 1,600 kHz). A TIS licensee must also certify that, to the best of his knowledge, he does not foresee harmful interference to broadcasting stations operating on the next two adjacent channels (550 kHz and 560 kHz or 1,580 kHz and 1,590 kHz).

Since the FCC is responsible for licensing nonfederal applicants and the IRAC is responsible for frequency assignments to federal agencies, coordination is required between FCC and IRAC to assure that interference situations do not occur.

2.3 ANTENNA CONFIGURATIONS

Two different types of TIS systems can be defined on the basis of antenna configurations. One type uses a conventional radiating antenna, most commonly a monopole, which gives a generally circular pattern of coverage. Typical monopole antennas are approximately 12.5 feet long for systems operating at 530 kHz and 15.5 feet long for systems operating at 1,610 kHz. Other radiating antenna configurations can also be used, for example, to achieve a directional pattern of coverage. The other type of TIS system uses a "leaky" cable as an antenna; it operates by induction to achieve an essentially cylindrical pattern of coverage in the immediate vicinity of the antenna.

Operationally, systems using cable antennas are particularly suited to use along roads and highways, while systems using monopole antennas are preferable for confined areas such as parking lots. There are also some technical differences between TIS systems using leaky cable and conventional antenna systems. Most notably, because of the length of cable antennas (and their

consequently higher impedances); cable antennas can be coupled more efficently to TIS transmitters. Use of cable antennas, at least theoretically, also results in more stable TIS systems because of the better match between antenna and transmitter impedances. Many more TIS installations have been made using conventional antennas than cable antennas, however, and technically acceptable results appear feasible using either type of antenna.

2.4 COVERAGE LIMITS

TIS transmitters are limited to a maximum of 10 watts if they are in conventional antenna systems, and to a maximum of 50 watts if they are in cable antenna systems. For conventional antenna systems, antenna heights cannot exceed 15 meters (49.2 feet), and field strengths cannot exceed 2 millivolts/meter measured at 1.5 kilometers (0.93 mile). For cable antenna systems, antenna lengths cannot exceed 3 kilometers (1.9 miles) and field strengths cannot exceed 2 millivolts/meter measured at 60 meters (197 feet) from the cable. As a practical matter, therefore, TIS systems using conventional antennas effectively cover a circle with a radius of 1.5 kilometers from the antenna, while TIS systems using cable antennas effectively cover a rectangle 3 kilometers long by 120 meters wide. A vehicle travelling at 55 miles per hour through the longest dimension of coverage remains within the covered area of either type of TIS system for approximately 2 minutes.

2.5 COCHANNEL OPERATION

Since there are only two frequencies available for TIS systems, systems authorized on the same frequency, but operated by different licenses must be separated from each other. When both systems use cable antennas, they must be separated by 0.5 kilometers (0.31 miles); when one system uses a cable antenna and the other a conventional antenna, they must be separated by 7.5 kilometers (4.66 miles); and when both systems use radiating antennas, they must be separated by 15 kilometers (9.3 miles). A TIS system may be authorized with less separation between it and previously authorized TIS systems, if the

reduced separation is agreed to by the stations already authorized. (Stations authorized for operation on one frequency by a single applicant are not subject to separation requirements.)

Because only two frequencies are available, only a limited number of stations can be installed. The FCC finds it likely, nevertheless, that several jurisdictions within a relatively small geographic area will have requirements for TIS systems. Because TIS systems equipped with cable antennas cover more limited areas than do TIS systems with conventional antennas, the FCC urges that primary consideration be given to using cable antennas. In some cases, however, it may be necessary for several jurisdictions to share a single TIS system. In all cases, it is necessary that an applicant for an authorization to operate a TIS system coordinate with all other licensees to resolve any cochannel interference problems and to establish any special operating conditions (including emergency ones).

2.6 UNLICENSED LOW POWER TRANSMITTERS

In addition to TIS systems as defined by FCC's Rules and Regulations, similar devices can be operated under Part 15 of the Rules and Regulations without licenses if their output power is restricted to 100 milliwatts. These unlicensed stations have an advantage over TIS systems because they can be operated on any frequency between 510 and 1,600 kHz. They can be operated with conventional or cable antennas. Their effective range is under 0.8 kilometer (0.5 mile) with a monopole antenna. Their short range makes them unsuitable for general emergency use.

3. CURRENT TIS APPLICATIONS

Functionally, TIS systems can be characterized by their program sources. The most common type of TIS system uses an endledd loop tape cartridge player located at the TIS transmitter; it is loaded with a prerecorded tape to provide a message, or sequence of messages, which is repeated over and over. Tape cartridge TIS systems generally lack real-time capabilities, since their cartridges must be replaced or rerecorded to change messages; only when these

types of TIS systems are located near attended facilities can program changes be made easily. Tape cartridge TIS systems are also not remotely monitored to determine whether they are operating correctly. Because of these limitations, tape cartridge TIS systems are generally used to provide fairly static, noncritical information.

A total of 41 tape cartridge units have been acquired by Yellowstone National Park; the uses made of them are typical of applications of this type of TIS system.[1] Units located at entry stations describe park fees, safety precautions (for example, not feeding the bears), speed limits and other restrictions, and availability of accommodations. Since these TIS units are in attended locations, tape cartridges can be changed to reflect changes in available accommodations.

TIS units are also located at major tourist attractions accessible by car (such as geothermal areas, scenic views, and wildlife observation areas). In most cases, TIS units are located in the parking areas associated with the points of interest. The recorded information they broadcast interprets features of interest to visitors. In some cases, TIS units are located on the highways approaching the points of interest, providing visitors with information encouraging them to stop. In some cases, TIS units provide interpretive, route, and advisory information to visitors at point along roads at which visitors do not stop their cars. Most of the TIS systems located away from entrance stations are not immediately accessible and are not generally changed, except on a long-term basis. In a special circumstance, such as closing

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[1] Information on TIS installations at Yellowstone National Park are derived from a telephone conversation with R.W. Campbell, President, Technical Systems, Inc., June 22, 1976; R.W. Campbell, letter to Murray Rosenthal, subject: Technical Systems Inc. Travelers Information Stations, June 22, 1976, including "The Medium Has a Message," reprinted from an unidentified source; and a telephone call to William Huffman, Communications Supervisor, Yellowstone National Park, November 28, 1977.

access to an area for maintenance, a suitable tape cartridge can be inserted to signal a temporary situation. In a serious emergency, obviously, the appropriate tape cartridge can be prepared, brought to a particular TIS system and broadcast, but getting such an emergency message on the air can involve several hours delay.

The other type of TIS system receives the material it broadcasts over a program link, generally a telephone line. The actual program input is usually from an endless loop tape cartridge player, which is loaded with a prerecorded tape. In the program link configuration, however, changing conditions are accommodated by operators, who switch from one prerecorded tape cartridge to another as appropriate. In most program link TIS systems, operators can also broadcast live material. As a result, program link TIS systems can generally accommodate real-time situations. Program link TIS systems also frequently incorporate feedback circuits, which allow their operators to monitor for degraded performance or system failures.

Because of their real-time capabilities, program link TIS systems are generally used in more critical situations. A representative program link TIS system is operated by the Wyoming Highway Department on Interstate Highway I-80 in Laramie and at Walcott Junction, about 80 miles west of Laramie.[1]

Three cable antenna TIS units are located in Laramie. They are designed to warn westbound travelers of inclement weather and other conditions on I-80; and when necessary, to reroute them onto US-30, which parallels I-80, or to divert them to accommodations in Laramie. A fourth cable antenna TIS unit is installed at Walcott Junction and performs similar functions for eastbound travelers. In addition, remotely controlled variable message signs indicate when the TIS units are operating and reinforce the information broadcast over them.

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[1] Information on this TIS system was obtained from Wyoming Highway Department, Traveler's Information Radio System, n.d.; and a telephone conversation with James Gaulke, Communications Supervisor, Wyoming Highway Department, November 17, 1977.

All four TIS units receive inputs from tape cartridge recorders in a program origination center located in Laramie. Feedback circuits from all four TIS units terminate in the center and indicate the performance of the units. Variable message signs are also controlled from the center. Program links, feedback circuits, and sign control circuits are leased from the telephone company.

In response to pressure from the Wyoming Broadcasters Association, the Wyoming Highway Commission has limited use of the Laramie-Walcott Junction TIS system to warning of inclement weather, precluding its use, in less critical situations. In addition, the Wyoming Highway Department is applying for authorization to increase its output power from 10 watts to 20 watts because it has had problems communicating with trucks and with automobiles having antennas built into their windshields.

4. APPLICATIONS OF TIS SYSTEMS TO CIVIL PREPAREDNESS EMERGENCIES

TIS systems can be used to provide information to motorists in emergency situations. Potential applications include:

1. Advising people approaching an emergency location of appropriate actions, or diverting them from that location
2. Providing specialized information to people in the immediate vicinity of an emergency; TIS systems can be used for paging emergency workers not otherwise equipped with communications
3. Supporting the evacuation of residents of threatened areas
4. Guiding the movement of the population on the highway during a crisis relocation situation

A number of problems exist, however, with using TIS systems for these purposes. Most notably TIS systems are usually not in suitable locations for such uses. Thus, the Laramie-Walcott Junction TIS system may be valuable during crisis relocation, but the units installed in Yellowstone National Park will have only limited utility. Further installations of TIS systems will remedy this

problem to some extent. Limitations inherent in the number of TIS systems that can be accommodated on the two available frequencies, however, and limitations on the locations for which TIS systems can be authorized (specifically limiting them to interstate highway interchanges and excluding other highway locations) will always preclude a full solution to the availability problem through proliferation of TIS units.

There are, however, several approaches that can be taken to ease the problem. First, civil preparedness agencies can make arrangements to move installed TIS units from their normal locations to emergency locations. Second, they can stockpile TIS units for installation and use during emergencies.

Under the first of these alternatives, civil preparedness agencies can arrange with the agencies making day-to-day use of TIS systems to remove them in an emergency; install them at an emergency location; and restore them to their normal locations at the end of the emergency, repairing or replacing damaged units. Systems using monopole antennas can be moved relatively easily. It may be necessary to acquire or stockpile some special parts such as antenna mounts.

Systems using cable antennas, however, generally cannot be moved unless spare cable is available (probably stockpiled by the civil preparedness agency) to replace the normal antenna, which is usually buried and, therefore, inaccessible. Systems with program links and feedback circuits also cannot be moved because of their complexity. Consequently, any TIS systems moved and operated under emergency circumstances will have to broadcast static information or will have to include provisions for an operator who prepares and changes tapes as required by changes in the emergency situation. Information can be fed to the TIS operator by CB radio or by other communications channel.

Under the second of these alternatives civil preparedness agencies can acquire their own TIS systems for emergency use. The approximate cost of a complete TIS system with a monopole antenna is $2,350. The basis for this estimate is as follows:

Transmitter and power supply	$1,000
Antenna and mount	150
Housing	150
Batteries (2-12 volt) and charger	150
Cartridge recorder/player	850
Microphone	25
Miscellaneous supplies and hardware	25
Total	$2,350

The approximate cost of a complete TIS system with a cable antenna is $7,925. The basis for this estimate is as follows:

Transmitter and power supply	$1,100
Antenna cable	3,550
Housing	300
Battery (3-12 volt) and charger	200
Cartridge recorder/player	850
Microphone	25
Miscellaneous supplies and hardware	100
Total	$7,925

If units are powered by available batteries, or if chargers are already available, these can be eliminated. Multiple units are subject to 10 to 20 percent discounts.

While either approach is feasible, there are a number of regulatory problems that must be resolved. Most notably, the TIS Rules and Regulations make no provisions for the use of TIS systems in emergencies. Even the types of information authorized for transmission by TIS systems do not provide for disseminating emergency information except, implicitly, that related to road conditions. In addition, no provision is made for operating TIS systems at locations not specifically identified in license applications.

In order to make the emergency use of relocated or stockpiled TIS systems feasible, the Rules and Regulations must be revised to: (1) include among the purposes for which TIS systems can be used providing civil preparedness information to the motoring public; and (2) authorize use of TIS systems in generally defined locations (specified in terms of geographical or geopolitical areas) under emergency conditions threatening lives and property. Special restrictions will have to be incorporated into any such authorizations either to protect radio stations operating on adjacent frequencies (specially 540 kHz and 1,600 kHz) from interference, or to allow such interference, but restrict the length of time during which it can occur. Special restrictions will also have to be developed for localized emergencies to protect from interference from nearby TIS systems not involved in the emergency.

Assuming that such regulatory problems can be overcome, to use TIS systems effectively, civil preparedness agencies must plan for their special characteristics.[1] The problem of keeping messages accurate and up to date is critical because TIS systems loose their credibility if they present erroneous or old information. The messages, themselves, must be prepared in a form suitable for use on TIS systems and must be appropriately delivered. It appears that messages should be held to a maximum of four units of information (where each unit contains a separate, specific instruction such as "turn left on route 294"). All messages should be repeated at least twice while the recipient is within TIS coverage. Messages should not be highly schematic, but should include contextual cues and should also avoid similar sounding key

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[1] The following information is derived from F.P. Gatling, Auditory Message Studies for Route Diversion, Federal Highway Administration, FHWA-RD-75-73, June 1975 (especially pp. 8-16, 20-25, 28, 32-34 and 36-49); F. P. Gatling, The Effect of Auditory and Visual Presentation of Navigational Messages on Message Retention," Federal Highway Administration, FHWA-RD-76-94, June 1976 (especially pp. 8-11); and Federal Highway Administration, Highway Advisory Radio, HTO-22, January 4, 1977, p. 3.

words to minimize errors by those receiving the messages. Messages should be delivered by someone who sounds knowledgeable and authoritative, and neither very young or very old. Urgency of tone and content is important, but must be restrained to avoid potentially dangerous overreactions by drivers. Finally, signs indicating the presence of a TIS must be posted 1 minute driving time before coverage is available, at the beginning of the covered area, and at the end of the covered area.

5. RECOMMENDED PROGRAM FOR USING TIS SYSTEMS IN CIVIL PREPAREDNESS EMERGENCIES

In order to help state and local civil preparedness agencies use TIS systems effectively, DCPA should initially enter into negotiations with the FCC members and staff on revising the TIS Rules and Regulations to:

1. Authorize the transmission of general civil preparedness information over TIS systems
2. Allow licensing of stockpiled TIS systems for use during emergencies in generally identified areas rather than in specified locations; and allow alternate licensing of fixed TIS systems for relocation to generally identified areas during emergencies
3. Provide for necessary protection of broadcasting stations operating on adjacent frequencies (especially 540 kHz and 1,600 kHz) and of TIS systems operating on the same channels

In addition, it would be desirable to broaden the locations in which TIS systems can be authorized to include highway locations other than interstate highway interchanges. Such an expansion, while not essential, would encourage installation of additional systems in potentially useful locations.

If the essential changes can be negotiated, DCPA should undertake several additional activities. It should revise matching funding guidance to indicate clearly that stockpiled TIS systems can be acquired with the aid of DCPA matching funds contributions. (These funds should not be available for other TIS systems, since most such systems are eligible for funding under various Department of Transportation programs.)

DCPA should also promulgate guidance on the use of TIS systems by civil preparedness agencies. Such guidance should describe TIS systems and their capabilities, describe methods of obtaining them, including stockpiling and relocation; and identify necessary steps in preparing for their use. (A draft Civil Preparedness Circular on TIS systems appears in Appendix C.) To aid state and local civil preparedness agencies, DCPA should maintain an inventory of TIS systems; this inventory can probably be derived from FCC's file of authorized TIS systems.

Finally, to evaluate fully the capabilities of TIS systems, DCPA should acquire four systems using cable antennas and four systems using monopole antennas. One system should be deployed to each DCPA Region Office and should be available for use at civil preparedness emergencies in or near the Region. The total cost of such a program, based upon the cost estimates in Section 4, above, is \$37,000[1] plus maintenance, which can be estimated at about 10 percent of capital cost per year (or \$3,700) because of the possibility that the units will receive hard use. Uses of these stockpiled units should involve evaluations of their effectiveness in emergency operations. Any future expansion of the stockpile of TIS units should be contingent upon the outcome of these evaluations.

TIS systems have the potential for contributing to the effectiveness of civil preparedness operations. The benefits available from them can only be realized, however, if FCC's Rules and Regulations for TIS systems are revised. If acceptable revisions are made, the program described will promote their effective use in large-scale emergencies.

[1] Includes estimated 10 percent discount.

APPENDIX A

IMPACT OF RECENT CHANGES TO FEDERAL COMMUNICATIONS COMMISSION RULES AND REGULATIONS ON THE RADIO AMATEUR CIVIL EMERGENCY SERVICE (RACES)

In early 1973, the Federal Communications Commission (FCC) published a Notice of Inquiry on Docket 19723, seeking comments on RACES. Information was sought on five topics:

1. Effectiveness of the present RACES program
2. Adequacy of the present RACES licensing system and of RACES use of special call signs
3. Extent of abuses, if any, of RACES Rules and Regulations, and possible means of ending the abuses
4. Appropriateness of privileges extended to RACES stations and possible changes to them
5. Adequacy of safeguards against nonessential use of RACES

Following receipt of comments, in mid-1974 the FCC issued a Notice of Proposed Rulemaking on Docket 19723. Final action on the docket occurred in early 1976.[1] Under the guise of deregulation, the FCC actions on the docket made major changes to RACES.

1. CHANGES TO RACES UNDER DOCKET 19723

The changes included the following:

1. Licensed Operators. All licensed operators and stations became eligible to participate in RACES, provided that operators and stations were affiliated with civil preparedness agencies. Previously, radio amateurs holding Novice and Technician licenses--the two lowest of six license classes--were ineligible to participate in RACES. This is a beneficial change, since there are many Technician-class licensees, who are heaviliy involved in the application of repeater technology in the very high frequency (VHF) and ultra high frequency (UHF) bands. Amateur radio repeaters have proved extremely valuable in local emergency operations.

[1]FCC, In the Matter of Deregulation of Subpart F, Radio Amateur Civil Emergency Service (RACES), in Part 97, Report and Order on Docket 19723, FCC 76-130, February 11, 1976.

2. Plans, Certifications, and Authorizations. FCC deleted the requirement to submit RACES plans as part of RACES station applications. It also deleted the necessity to certify the loyalty and competence of RACES radio offices. Omission of the FCC requirement for RACES plans, certifications, and authorizations is realistic. These requirements had created mountains of paper, which FCC staff members simply could not process. Ending the requirement for pland means, however, that many RACES units are operating without any coordination with state civil preparedness agencies and without any formal guidance as to their roles and functions in civil preparedness operations.

3. Civil Preparedness Licensees. FCC allowed state and local civil preparedness agencies to hold RACES station licenses directly. Previously, these licenses were held by individual amateurs or by amateur radio clubs, most of the latter agency captives set up solely to comply with FCC requirements. The change is advantageous.

4. Frequencies. The revisions stated explicitly that, except during a national emergency, all frequencies in the Amateur Radio Service are shared by the radio amateurs and RACES. This change clarified some confusion as to whether RACES units are limited in peacetime emergencies to using the subset of Amateur Radio Service frequencies specifically available to RACES in wartime.

5. Control Operators. In a critical change, the FCC excluded all persons, except those licensed in the Amateur Radio Service from serving in RACES nets. The change also limited the privileges of RACES personnel to those of their license classes. This change ended the long standing procedure of using Commercial-class licensees as RACES operators. Since radio amateurs are generally not available on a full-time basis, this change has restricted flexibility previously inherent in RACES.

6. Use of RACES. In another critical change, the FCC limited use of RACES to actual civil preparedness emergencies and restricted training drills and tests to no more than one hour per week. These changes precluded RACES involvement in public service activities (such as fairs, parades, and vaccination clinics) and in low-stress emergencies (such routine police and fire operations). These activities are essential to building unified, experienced, and disciplined RACES units. The FCC changes also make

realistic training, especially in simulation exercises, impossible, further degrading the ability of RACES units to function in high-stress emergencies.

7. Special Call Signs. The RACES revision prohibited the use of special call signs, except by stations owned by civil preparedness agencies. This change complicates passing emergency traffic, since each RACES participant has to be addressed using his full call sign. It also complicates distinguishing routine and emergency traffic. Finally, it deprives members of RACES units of the distinction of using special call signs.

8. Communications with Non-RACES Stations. The last of the revisions prohibited stations participating in RACES (both stations operated by civil preparedness agencies and those operated by affiliated radio amateurs) from communicating with non-RACES amateur stations. This revision precludes involving unaffiliated radio amateurs in RACES emergency operations even when such involvement is appropriate. It also prohibits RACES personnel from passing health and welfare traffic into or out of an emergency area from or to radio amateurs who can handle that traffic in their own areas.

In summary, changes allowing all licensees to participate in RACES; authorizing civil preparedness agencies to hold RACES station licenses; and allowing RACES to use all Amateur Radio frequencies in peacetime emergencies have been beneficial. The deletion of requirements for RACES plans, certifications, and authorizations are realistic for FCC, but has left a gap in state coordination efforts and has left some local RACES units without guidance.

The changes prohibiting Commercial licensees from serving as RACES operators; preventing RACES from being used in other than actual civil preparedness emergencies; restricing RACES tests and drills to one hour per week; eliminating special calls signs; and banning communications between RACES participants and non-RACES radio amateurs have been detrimental. Overall, the RACES revisions have stripped RACES of most of its unique features, leaving it little different from the Amateur Radio Service. In fact, the most important remaining difference is the reservation of selected frequencies for RACES use

in a national emergency. In balance, the changes have been highly detrimental to RACES and to many of those civil preparedness agencies making use of it.

2. AGENCY RESPONSES

In general, most of those state civil preparedness agencies that consider RACES useful, perhaps 30 to 35 agencies,[1] have responded unfavorably to the new RACES Rules and Regulations. A few states, generally those with sparse populations, have not found the revised RACES Rules and Regulations onerous; and at least one such state actively supported the revision. Local civil preparedness agencies that consider RACES useful also seem to have found the changes damaging. Precise estimates are not available, however, because specific questions on RACES were not included in the questionnaires for the current study.

In partial response to revisions of the RACES Rule and Regulations, state civil preparedness agencies across the country have petitioned the FCC, through the Associated Public-Safety Communications Officers, Inc. (APCO), the professional organization of emergency services communications personnel, to create a Civil Preparedness Radio Service within the Local Government Radio Services.[2] The petition briefly addresses the need for both high frequency (HF) communications and for VHF and UHF communications--HF for long-haul links between disaster areas and state agencies, VHF and UHF for communications within disaster areas. The petition only requests 10 6-kHz channels between 2 and 10 MHz; the 10 channels are to be used for single sideband (SSB) transmissions. The petition proposes to obtain the frequencies by sharing purportedly underused military frequencies. These HF channels, if granted, would offer the opportunity to use amateur radio equipment without the inhibitions placed

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[1] Murray Rosenthal, The Emergency Role of Amateur Radio, SDC TM-4877/002/00, December 15, 1972, p. I-5.

[2] APCO, "In the Matter of Amendment of Part 89 of the Commissions Rules to Establish the Civil Preparedness Radio Service, Petition before the FCC (RM-3059)," in APCO Bulletin, Vol. 44, No. 3, March 1978, pp. 10, 12, 28.

on it by RACES and without the necessity of involving any volunteers. VHF and UHF frequencies were not requested because APCO personnel determined that none were available. The prospects for the FCC's responding favorably to the current petition for HF channels cannot be assessed. Pending FCC action, a number of agencies have already obtained HF frequencies, generally shared with their National Guard units, which they use on their amateur radio equipment, but without having to involve amateur operators.

3. RECOMMENDED DCPA ACTIONS ON RACES

The viability of RACES for most users depends upon the restoration of some of its capabilities deleted in the revision, upon finding alternatives to compensate for the loss of these capabilities, or upon a combination of both.

It is appropriate for DCPA to seek the restoration of some provisions of earlier RACES Rules and Regulations, especially provisions for: (1) using Commercial class operators to supplement amateur licensees; (2) conducting adequate training exercises; (3) operating with nonaffiliated radio amateurs, when appropriate; and (4) using RACES in public service and low-stress emergencies to build and maintain capabilities for use in severe emergencies. A petition to FCC could be justified on the basis of experience with the new Rules and Regulations during the past two years. Many state and local civil preparedness agencies would support such a petition. The prospects, unfortunately, are poor for what will be perceived as a reversal of FCC's position.

If restoration of critical RACES features cannot be accomplished, it is essential that as much alternative capability be developed as possible in amateur radio support of civil preparedness operations. While there is no easy way to get around the prohibitions against using Commercial licensees, DCPA could encourage those with Commercial licenses, who do not already hold amateur licenses, to qualify for them. Efforts should also be undertaken to develop improved working relationships with the American Radio Relay League (ARRL) and other amateur radio organizations. The goal of these efforts should be to encourage civil preparedness agencies to team with ARRL's Amateur Radio

Emergency Service (ARES), forming joint RACES/ARES units. Such units should involve dual membership of all participants in both RACES and ARES. The RACES affiliation is necessary to assure continuity of operations in wartime and in severe peacetime emergencies; the ARES affiliation, to provide for adequate training, involvement in community service activities, and involvement in low-stress emergencies.

Both alternatives can be combined, and a combination of alternatives probably produces the best overall results. Regardless of which alternative is effective, however, DCPA should attempt to assure that emergency operations are conducted according to plans prepared in conjunction with state civil preparedness agencies.

A failure to shore up RACES in the immediate future may result in loss of amateur radio capabilities to many (perhaps most) state and local civil preparedness agencies.

APPENDIX B

DRAFT CIVIL PREPAREDNESS CIRCULAR

CITIZENS BAND RADIO SUPPORT
FOR EMERGENCY PREPAREDNESS

This draft Civil Preparedness Circular is based on the current Federal Communications Commission Rules and Regulations for the CB Radio Service (see Chapter II). The draft includes the approaches to organizing CB resources recommended in Chapter X, Section 1; however, it does not incorporate any of the recommended DCPA actions for establishing effective Personal Radio Services programs contained in Chapter X, Section 2. This approach was chosen to make the draft immediately useful. Implementation of the recommended DCPA programs involves so many alternatives that including the recommended program would produce an overly complicated or highly speculative draft. It is recommended that DCPA promulgate a Civil Preparedness Circular on the CB Radio Service as soon as possible. Any steps by DCPA to implement the program recommended in this report should be incorporated into the published circular.

1. PURPOSE

This circular provides guidance for state and local civil preparedness agencies concerned with Citizens Band (CB) radio support during peacetime and wartime emergencies.

2. GENERAL

The Citizens Band Radio Service was established by the Federal Communications Commission (FCC). It provides short-range, two-way radio communications for individuals and organizations not usually having access to other types of radio communications.* At present, there are approximately 12-million CB licensees operating about 25-million transceivers.

A CB station can be used for communications affecting a licensee's personal and business activities. Stations can be used for nonpersonal communications relating to preserving life and protecting property; assisting travelers; and participating in civil preparedness drills, tests, and actual emergencies proclaimed by the civil preparedness agency responsible for the impacted area. A CB station cannot be used in a number of activities such as transmitting program material for direct retransmission by a radio or television station or over a public address system; transmitting false distress signals; and communicating (or attempting to communicate) over a distance of more than 150 miles directly or by a series of relays.

The CB Radio Service currently operates on 40 channels in the vicinity of 27 MHz. The CB emergency channel (Channel 9) is reserved for emergency communications affecting the safety of lives and the protection of property; and communications necessary to render assistance to travelers.

The service is limited to voice transmissions except for tones or other signals used to operate squelch or selective calling circuits. Only amplitude-modulated

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*The CB Radio Service is governed by Part 95 of the FCC Rules and Regulations.

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(AM) signals can be transmitted, but either double sideband (DSB) or single sideband (SSB) emissions can be used on all channels. DSB emissions are limited to 4 watts carrier output power; SSB, to 12 watts peak envelop power, giving SSB an advantage over DSB in range and resistance to interference. External power amplifiers are prohibited. Directional antennas are limited to 20 feet above the ground (or 20 feet above the objects on which they are mounted); ominidirectional antennas, to 60 feet above the ground.

A single license covers all CB transceivers operated by one licensee. State and local government agencies are specifically eligible to hold licenses as are individuals and partnerships. With special approval, licenses are also granted to unincorporated associations and to corporations. Applicants do not have to demonstrate either technical skills or need for their licenses. All licensees must be at least 18 years old and U.S. citizens. Government agencies are warned that CB frequencies are shared "without distinction between all licensees and that no protection is afforded to the communications of any station in this service from interference which may be caused by the authorized operation of other licensed stations."*

Control of authorized transmitters must be retained by the licensee at all times. For licenses granted to state and local government agencies, employees of the agencies may operate the agencies' stations. Members of unincorporated associations or corporations (such as those set up to support civil preparedness agencies) can also operate any stations licensed for the purpose. Other persons, as necessary (e.g., volunteers), can also operate civil preparedness agencies' stations upon FCC approval of special requests. In general use, any licensed individuals' stations can be operated by members of the licensees' immediate families (including minor children); by partners, if the licensees are partnerships; or by the employees of business licencees.

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*FCC Rules and Regulations, Part 95, note following Para. 95.411(a).

3. ADVANTAGES AND DISADVANTAGES OF CB RADIO SERVICE

On the negative side, CB is subject to numerous technical and operational problems. The frequencies, modulation, and power outputs specified for the service subject it to interference from other CBers, from non-CB radio frequency users who share the band, and from electrical motors and engine ignitions. CB signals are subject to skywave (or skip) propagation, and can sometimes be detected hundreds and even thousands of miles away as noise and occasionally as intelligible signals. Skywave propagation is increasing as the 11-year sunspot cycle approaches its peak in 1979. The large number of licensees and transceivers create congestion on some channels in most locations (e.g., Channel 19, the truckers' channel), and on all channels in many metropolitan areas. Some CBers lack discipline, interfering with communications, refusing to share channel time, and congregating at emergency locations. CB channels are rumor-prone; information on them is retransmitted repeatedly, altering its content with each repetition. CB radio has been used to support a variety of crimes and other inappropriate activities.

On the positive side, the persons who cause problems on CB channels, or who use CB to support illegal activities are a small minority of CBers. The large number of mobile CB transceivers increases the potential "eyes and ears" available to report emergency information. Most CBers are willing to cooperate with emergency services agencies, if they know an emergency is in progress. Despite serious technical limitations and operational problems, moreover, CBers have participated in many beneficial activities, which have saved lives and protected property. These beneficial activities include monitoring Channel 9 and responding to requests on it for information and assistance; participating in community activities such as fairs and vaccination clinics; patrolling neighborhoods to prevent crime; watching for urban and wildland fires; assisting in search and rescue missions; and supporting disaster relief operations. Many public safety agencies have adopted CB because it provides access to and inputs from the public. For example, 48 of 49 state highway patrols and state police agencies have installed equipment or allowed officers to use their own

equipment in at least some of their cars. More than 13,000 state patrol and state police agency cars are CB equipped. At least 30 of these agencies have installed CB in fixed facilities.

4. PROGRAM FOR USING CB RADIO IN CIVIL PREPAREDNESS OPERATIONS

Assessment of recent disaster experiences indicates that CBers will show up at virtually all major emergencies. Provisions must be made to control them, therefore, and control can probably be exercised best by involving the most reliable of them in useful, preplanned functions. If they are simply disregarded, CBers can be a source of disruptive behavior.

Because of the short-range characteristics of CB communications, control must generally be effected by local civil preparedness agencies (usually with the support of local law enforcement and other public safety agencies). State civil preparedness agencies should be prepared to exchange information on CB, and to coordinate among local agencies because even short-range communications can extend beyond local boundaries; CB channels are a limited resource; and, finally, CB skip can cause interference over long distances.

Local civil preparedness agencies can exercise positive control over the CB Radio Service and CBers through one of two programs:

1. Minimum CB Program. This program is designed to determine what information (and misinformation) is being transmitted over CB channels, to suppress rumors being passed on those channels, and to respond selectively to reports of damage and injuries and requests for assistance received from CBers
2. Improved CB Program. This program is designed to make active use of CBers and their equipment as sources of communications and other emergency assistance. It is also designed to perform the various functions of the minimum program

Implementation and operation of most minimum CB programs and all improved CB programs involves several activities:

1. Developing a plan for using CBers and their equipment

2. Adopting an existing volunteer CB organization to provide required services, or developing a new organization to do so

3. Training the volunteer CBers to perform the services they are to provide, motivating them to stick with the program, and disciplining them when they fail to perform appropriately

4. Giving the CBers suitable operational experience so they are proficient in their assigned tasks

5. Assuring that, when an emergency arises, CBers operate under adequate supervision and receive suitable direction from their supervisors

In some jurisdictions, it may be possible to implement minimum CB programs without using any volunteers. In those cases, the volunteer-oriented activities listed above are not required. Planning is, nevertheless, required to develop such staff-based minimum CB programs.

5. MINIMUM PROGRAM

The minimum program requires enough CBers to monitor Channel 9 and other CB channels in local use both to determine information being passed on them and to receive reports of damage and requests for assistance. Jurisdictions in which local law enforcement and other emergency services personnel are equipped with CB transceivers may have adequate coverage of CB channels without using volunteers. In those jurisdictions, minimum programs can be be planned and operated without the involvement of volunteers.

If volunteers are used in a *minimum program* their services can often be obtained by involving volunteer CB groups, such as REACT and ALERT teams, in the program.* Where these groups exist, they are set up to monitor CB channels. Some already monitor local-use channels in addition to Channel 9. For those groups that do not already monitor local-use channels, covering them in an emergency will generally not prove difficult. Most REACT and ALERT teams and other volunteer CB groups have established disciplined operations. REACT and ALERT teams and other CB groups also have day-to-day functions similar to the ones they will perform in emergencies, assuring continuing operational experience. Members of existing groups may have to be trained in screen CB traffic for rumors; and their handling of requests for assistance may have to be upgraded to allow for filtering of emergency requests to weed out false or unreasonable ones. Where local volunteer CB groups are not available, or where they are unable or unwilling to serve, new groups will have to be recruited, trained, and assigned ongoing operational functions as well as emergency ones. Existing groups should be allowed to maintain their own identities; new ones can be incorporated into civil preparedness organizations, but they may be easier to maintain if they are enrolled in REACT and ALERT and allowed some autonomy.

If it becomes necessary to *disseminate* rumor-correcting information, this function should generally be performed by emergency services personnel or by other public officials, because they can exercise greater authority than can

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*The identities and mailing addresses for local teams can be obtained by contacting:

REACT International, Inc.
Suite 1212
111 East Wacker Drive
Chicago, Illinois 60601
(312) 644-7620

ALERT Section
American Citizens Band Operators Association, Inc.
308 West Basin Road
New Castle, Delaware 19720
(302) 323-0303

AD-A055 327 SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF F/G 17/2.1
THE ROLE OF THE CITIZENS BAND RADIO SERVICE AND TRAVELERS INFOR--ETC(U)
MAY 78 M ROSENTHAL DCPA01-76-C-0330
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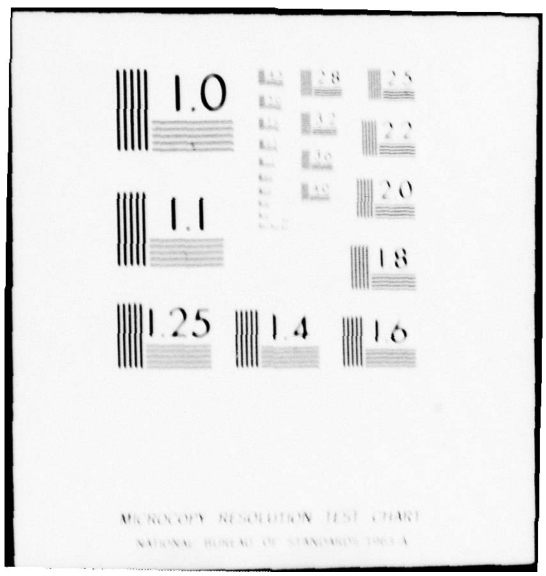
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MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

volunteers. The severity of rumor generation and the criticality of suppressing rumors will generally determine the rank and identifiability of the persons who should transmit rumor-correcting messages.

In jurisdictions having a 911 emergency telephone capability, the minimum CB program should generally be coordinated with it. Since most 911 systems are designed for routine peak loads, it is often necessary to give volunteer monitors access to call-answering and dispatching personnel through unlisted emergency telephone numbers. Access through such special numbers avoids the congestion likely to occur when members of the general public access police, fire, and other emergency services though the emergency telephone number.

Finally, the minimum program must include actions by local law enforcement personnel to assure that, if necessary, unaffiliated CBers are dispersed and do not interfere with emergency operations. Enforcement actions may occasionally have to be taken against CBers who commit malicious acts such as intentionally transmitting false hazard or threat reports or making false requests for assistance.

6. IMPROVED PROGRAM

The improved CB program requires volunteer CBers to perform the functions of the minimum program plus other communications and noncommunications support functions. The amount of support required and the number of volunteers available to provide it must be determined when such an improved CB program is planned.

In establishing an improved CB program, preference should be given to using existing volunteer CB groups such as local REACT and ALERT teams and participants in Community Radio Watch (CRW) programs. CRW programs team CBers, radio amateurs, and business radio users to report incidents that may require the assistance of police, fire, emergency medical, and other public safety

agencies.* Where CRW programs are not available, local civil preparedness agencies can team CBers with radio amateurs and also with business radio users.

While emphasis should generally be upon CBers performing communications functions, volunteers now perform enough other functions in emergencies that they can also be considered as potential resources for noncommunications activities. Care should be taken, however, to avoid assigning either communications or noncommunications functions to CBers not suited to their capabilities or not compatible with the capabilities of CB transceivers.

Possible communications functions to be assigned to CBers, in addition to those of the minimum program, include providing communications for various emergency components lacking them; replacing telephone services lost because of outages; and relaying information to members of the public in CB-equipped vehicles. In a peacetime situation, this effort may be applied to handling health and welfare traffic into and out of the area impacted by an emergency. In a crisis relocation situation, CBers may be used to provide communications between local emergency operations centers (EOC), congregate care centers, and work parties. In a nuclear attack situation, surviving CB communications capabilities may be applied to handling communications between shelters and local EOCs. The use of

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*Identities and mailing addresses of local CRW programs can be obtained from:

Community Radio Watch
Motorola Communications and Electronics Inc.
1301 East Algonguin Road
Schaumburg, Illinois 60172
(312) 358-7900

CB transceivers is, unfortunately, problematic in a transattack and post-attack situation since they may be damaged by electromagnetic pulse (EMP), and temporary damage to the lonosphere may interfere with propagation.*

Noncommunications support functions assigned to CBers in a peacetime emergency may include observing and reporting damage and relaying requests for assistance, administering first aid and driving makeshift ambulances, assisting with traffic control, helping to provide perimeter security, and patrolling to prevent looting. In a crisis relocation situation, assignments may include assisting motorists on relocation routes and directing newly arrived persons to their relocation destinations. In a nuclear attack situation, support assignments may include disaster-type functions as well as measuring and reporting fallout intensitites.

All of the communications and support functions assigned require training before CBers can perform them. The communications functions require that CBers learn communications practices that encourage discipline and are compatible with those used by other emergency services components. Noncommunications support functions require that CBers learn how to perform the activities required of them. In some cases these noncommunications functions (notably giving first aid and monitoring radiation levels) involve highly specialized skills.

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*In addition, Section 606 of the Communications Act of 1934, allows the president to shut down CB and other communications in the event of an attack, threat of an attack, or occurrence of some other natural emergency. Negotiations are in progress to waive this provision, but to limit CB communications to those essential to protecting lives and property and to reaching relocation destinations.

Because the volunteers in an improved CB program are actively involved in emergency operations, they are obviously subject to much greater stress than they would be in a minimum CB program. It is important, therefore, that they have adequate opportunities to practice their assignments (and any special training associated with them). Practice should occur, whenever possible, during situations imposing relatively low stress levels on volunteers. These situations build familiarity with assignments and unify volunteer participants among themselves as well as with other emergency services personnel. In fact, the day-to-day services performed by REACT and ALERT teams or by participants in CRW programs provide good bases for such ongoing operational experiences.

The conditions for controlling CB volunteers in the improved program are established continuously during training activities and during actual low stress operations. This approach allows weeding out of those volunteers who cannot or will not conform to acceptable standards of performance. Those standards generally should require that volunteers not report for service unless called and should require that they leave an operational area when their services are no longer needed. Because of the availability of a trained corps of volunteer CBers, it becomes possible, if necessary, to absorb some unaffiliated volunteers into emergency operations.

Because CB channels are in active use in an emergency, an improved CB program must include provisions for exercising discipline over channel use. Approaches that have been used successfully in various juristidctions around the country include:

1. Providing advanced notice in newspapers and on radio and television of CB channels planned for local emergency use
2. Repeating CB channel-use information periodically during actual emergencies over radio and television, and requesting persons in the area to keep those CB channels clear
3. Transmitting over CB channels an announcement, by high-level emergency services or government officials, that an emergency is in progress, and requesting that the channels involved be cleared for emergency use

4. Retransmitting this announcement periodically to assure that CBers entering the area of an emergency are aware of the emergency and do not accidentally use cleared channels

5. Contacting CBers who use temporarily cleared channels or create cochannel or adjacent channel interference on emergency channels

Contacts with CBers using temporarily cleared emergency channels or creating interference on them can often be made over the CB channels, themselves. In some instances contacts have been made by telephone; occasionally long distance calls have been required to silence accidental interference caused by skywave propagation. In a few instances, local emergency services personnel, or CBers, have visited offenders to silence interference. The use of CBers for this function is questionable, however, because of the animosity potentially created. Obviously the amount of time and effort spent clearing emergency channels or keeping them clear is a function of the severity of the emergency involved, the availability of persons to undertake the effort, and the criticality of CB to operations in the emergency.

Those unaffiliated volunteers who are not integrated into emergency operations should be dispersed, if necessary, by law enforcement personnel so they do not interfere with emergency operations. Enforcement actions may have to be taken against those CBers who commit malicious acts such as intentionally transmitting false reports or making false requests for assistance.

7. NATIONAL EMERGENCY ACTION RADIO (NEAR) PROGRAM

The National Highway Traffic Safety Administration (NHTSA), U.S. Department of Transportation, has developed the NEAR program, which may provide additional assistance to CB programs developed by state and local civil preparedness agencies.

The NHTSA NEAR program allows states to use federal highway safety block grants for developing and operating CB programs to improve emergency medical services, police traffic services, debris hazard control, and school bus safety. Before states can spend funds on NEAR programs, however, they must develop state NEAR

plans. The state plans have to provide for all aspects of implementing and operating the programs. This approach establishes overall control and management of the program by state government. The NEAR program also has a strong local component based upon country and city participation in program planning and implementation.

State programs can use federal funds to install CB equipment in vehicles and fixed locations operated by a wide variety of state and local public safety, highway, emergency medical, and civil preparedness agencies. Federal funds can also be used for training, public information and eduction, data collection and evaluation, and staffing and administration. NEAR encourages the use of volunteer CB resources, placing emphasis upon REACT and ALERT because they are national organizations, have state-level components, and assure an adequate level of uniformity and discipline from locality to locality. A state NEAR program, however, cannot purchase equipment for volunteers.

While the NEAR program is dedicated to improving various aspects of highway safety, it already accepts participation by local civil preparedness agencies. The emphasis NEAR places upon training for and conducting day-to-day operations help to assure team continuity and the readiness of CBers to perform in the event of a major peacetime emergency or nuclear attack situation. In this context, the involvement of state police/state patrol agencies as well as local sheriffs' offices and police departments is likely to impose discipline upon nonaffiliated CBers who may be somewhat less likely to interfere in emergency operations if their actions may be monitored by state and local police. The involvement of these agencies, furthermore, provides logical ties with public safety agencies normally active in civil preparedness emergencies. These ties are particularly strong in crisis relocation situations because of the need to move large numbers of people in their motor vehicles.

It may be possible for state and local civil preparedness agencies to participate in state NEAR programs and especially in those states just developing their programs. Information on the status of NEAR in any state can be obtained by contacting the Governor's Representative for Highway Safety, who can be

located through the state department of transportation; through the state highway patrol or the state police agency; or by contacting U.S. Department of Transportation, National Highway Traffic Safety Administration, NEAR Program, Washington, D.C. 20590

8. ROLE OF DCPA

DCPA will provide limited technical assistance in planning for the emergency use of the CB Radio Service. Such assistance should be requested through the state civil preparedness agency which will forward the request to the nearest DCPA Region Office.

DCPA will provide matching funds contributions to assist in the acquisition of CB base station transceivers for use in energency operations centers. Requests for such support must be justified as required by DCPA Federal Assitance Handbook (CPG 1-3) and Emergency Communications (CPG 1-18).

APPENDIX C

DRAFT CIVIL PREPAREDNESS CIRCULAR

TRAVELERS INFORMATION STATIONS FOR EMERGENCY PREPAREDNESS

This draft *Civil Preparedness Circular is based on the recommendations* in Chapter X that FCC Rules and Regulations for Travelers Information Stations be revised to:

1. Specifically recognize dissemination of civil preparedness information as an allowable function
2. Permit licensing of stockpiled stations for emergency use in a general area
3. Permit alternate licensing of stations to permit routine operation in a fixed location and emergency use in a general area

The draft is also based on recommendations for DCPA policies contained in Chapter X that would:

1. Maintain an inventory of Travelers Information Stations in operation
2. Stockpile one station in each DCPA Region Office for use in emergencies
3. Provide matching funds support for stockpiled Travelers Information Stations and for support equipment for fixed and dual licensed stations

These policies are indicated in the text in italic. Footnotes indicate changes that must be made to the draft circular to delete reference to proposed revisions of FCC Rules and Regulations and recommended DCPA policies. A Civil Preparedness Circular on the emergency use of travelers Information Stations should be promulgated as soon as possible.

1. PURPOSE

This circular provides guidance for state and local civil preparedness agencies on using Travelers Information Stations (TIS) during peactime and wartime emergencies.

2. GENERAL

a. Travelers Information Stations are low-powered AM broadcasting stations. These stations broadcast on either 530 kHz or 1,610 kHz, which are just below and above the standard AM broadcasting band. Messages are received on conventional automobile-type radios, most of which can tune to TIS frequencies.

Normally stations include a single transmitter, but systems of two or more transmitters can be licensed. Most stations transmit messages prerecorded on endless loop tape cartridges. These stations lack real-time capabilities. Some stations, however, operate from program origination centers. Personnel can select tape cartridges dynamically and can even originate live broadcasts.

b. Travelers Information Stations are licensed by the Federal Communications Commission (FCC) in the Local Government Services for transmitting noncommercial voice messages on traffic and road conditions; traffic hazards and travelers advisories; directions; availability of lodgings, rest stops, and service stations; points of interest, and *civil preparedness emergencies.** Travelers Information Stations can be installed in areas frequented by travelers including air, train, and bus transportation terminals, public parks and historical sites, interstate highway interchanges, bridges, and tunnels. *Stations can also be temporarily installed at or moved to locations of civil preparedness emergencies provided that the locations are consistent with emergency operating areas specified in license provisions.*** Eligible licensees are territories,

*If FCC TIS Rules and Regulations are not amended to explicitely allow use of stations in civil preparedness emergencies, the statement in italics should be deleted.

**If FCC TIS Rules and Regulations are not amended to allow stockpiling or alternate licensing, the statement in italics should be deleted.

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possessions, and states and their subdivisions including counties, cities, towns, districts, and authorities. For detailed information on licensing requirements see Part 89 of the FCC Rules and Regulations.

c. Travelers Information Stations use two different kinds of antennas: (1) a conventional antenna, generally a whip, which gives a circular coverage pattern; and (2) a special cable which lies on or is buried in the ground and gives a cylindrical coverage pattern in the immediate vicinity of the antenna. If they use whip antennas, Travelers Information Stations are limited to 10 watts output. Antenna height cannot exceed 15 meters (49.2 feet), and effective range from the antenna is limited to 1.5 kilometers (0.93 mile); signal strength cannot exceed 2 millivolts per meter at this distance. If they use cable antennas, Travelers Information Stations are limited to 50 watts output. Antenna length cannot exceed 3 kilometers, and effective range from the antenna is limited to 60 meters (197 feet); signal strength cannot exceed 2 millivolts per meter at this distance. A vehicle travelling at 55 miles per hour remains within the coverage area of either type of station for a maximum of approximately 2 minutes.

d. Care must be exercised not to interfere with broadcasting stations operating on frequencies close to those available for Travelers Information Stations. To protect broadcasting stations operating on the closest frequencies (540 kHz and 1,600 kHz), a Travelers Information Station cannot be located within 15 kilometers (9.3 miles) from the daytime protected contour of any station operating on an adjacent frequency.*

To prevent Travelers Information Stations operating on the same frequency from interfering with each other, they must be separated by 0.5 kilometer (0.31 mile) if both use cable antennas; by 7.5 kilometers (4.66 miles) if one uses a cable antenna and the other uses a whip antenna; and by 15 kilometers (9.3 miles) if both use whip antennas. The FCC urges that preference be given to use of cable antenna systems. It may also be necessary for nearby jurisdictions to share a single Travelers Information Station.

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*If FCC TIS Rules and Regulations are not changed to allow stockpiled or alternately licensed stations, Section 2.d should be deleted and Section 2.e should be renumbered accordingly.

e. In addition to FCC-licensed Travelers Information Stations, the FCC also allows unlicensed 100 milliwatt stations operating on any frequency between 510 kHz and 1,600 kHz. Those stations can use either whip or cable antennas. Their very low power generally limits the range of these stations. Stations equipped with whip antennas, have a range of less than 0.8 kilometer (0.5 mile). *The limited range generally makes these unlicensed stations unsuitable for civil preparedness operations except in special circumstances.**

3. USING TRAVELERS INFORMATION STATIONS IN EMERGENCIES

a. Travelers Information Stations can be used to provide information to motorists during emergencies. Potential applications include:

1. Advising people approaching an emergency location of the appropriate actions for them to take, or diverting them from that location
2. Providing specialized information to people in the immediate vicinity of an emergency, or assisting them to evacuate a threatened area
3. Guiding the movement of the population on the highway during a crisis relocation situation

*Civil preparedness agencies can use installed stations, they can share alternately licensed stations, or they can purchase and stockpile stations.***

b. In order to take maximum advantage of existing Travelers Information Stations it is necessary to know of their existence, develop cooperative agreements with their operators, and plan for their emergency use.

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*If the recommended policy against using unlicensed stations is not adopted, the sentence in italic should be deleted.

**If FCC TIS Rules and Regulations are not amended to allow stockpiling or alternate licensing, the statement in italics should be deleted.

1. *Information on the locations of Travelers Information Stations can be obtained by contacting DCPA, Plans and Operations Directorate, Washington, D.C. 20301, or by contacting the nearest DCPA Region Office.**

2. Negotiation of a cooperative emergency agreement should not be a problem if true emergency situations are covered. Generally, all out of pocket costs (e.g., tape cartridges and miscellaneous supplies), which should be small, will be covered by state or local civil preparedness agencies, but some TIS operators will donate these costs.

3. Planning for emergency use involves making provisions to change from routine to emergency programming. If the Travelers Information Station is remotely programmed and program links are still operating, the initial change can be made by TIS operating personnel in response to predetermined conditions, or following instructions by authorized persons (e.g., civil preparedness director, chief of police, etc.). TIS operating personnel must be provided with a list of contacts with telephone numbers and a backup procedure in the event telephones fail. The list must be kept up to date. Depending on the cooperative agreement, and the continued operability of telephone lines, subsequent changes in programming can be made by TIS operating personnel, or civil preparedness or public safety employees may be stationed at the TIS program origination point. Backup procedures will have to be developed to bypass inoperable programming links.

   If the Travelers Information Station is not programmed remotely, the initial change will probably have to be made by a civil preparedness or public safety employee assigned to go to the TIS location and insert a tape cartridge appropriate to the emergency. Keys to the TIS enclosure and any preprogrammed tape cartridges should be in a readily accessible place. A list of persons authorized to change tape cartridges must be available to agencies (e.g., police, fire departments) responsible for detecting emergency situations. The list must be kept up to date. Backup procedures should be available in the event telephones fail. Since most emergencies change too dynamically to depend entirely upon prerecorded tape cartridges, it will probably be necessary

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*If DCPA does not maintain a TIS inventory, this sentence should read: Information on Travelers Information Station licenses can be obtained by contacting the Federal Communications Commission, Safety and Special Radio Services Bureau, Washington, D.C. 20554, or the nearest FCC Field Office.

either to station one or more persons at the TIS location or, if the distance is not great and congestion is not a problem, to shuttle tapes between the EOC and the TIS location. In the former case, a portable cartridge recorder and possibly a microphone for live broadcasting will be required. If the weather is inclement a shelter (e.g., a vehicle) is required.

4. Plans should also provide for preparation of suitable messages. The characteristics of Travelers Information Stations requires that messages broadcast over them:

   - Contain no more than four units of information (separate, specific instructions such as "turn left on route 294")
   - Present full sentences containing enough information to maximize the chances that recipients will be able to fill in any words they miss
   - Avoid similar sounding key words that can lead to errors
   - Be repeated twice while each recipient is in TIS coverage
   - Be delivered by someone who can achieve a knowledgeable, authoritative tone and who sounds neither very young nor very old

   These measures are necessary to assure that TIS messages are heeded by recipients.

c. In order to take maximum advantage of Travelers Information Stations, which are stockpiled and can be deployed to emergency locations when needed; or for which alternate licensing has been arranged and which can be moved from normal locations to emergency ones, it is also necessary to develop plans for their use.*

1. *Owning and alternate licensing impose requirements for preplanning similar to those described in Section 3.b: it is necessary to assure that suitable personnel are assigned to deploy and program stations, that assigned personnel are called to duty promptly, and that they are qualified to perform the necessary tech-*

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*If FCC TIS Rules and Regulations are not amended to allow stockpiling or alternate licensing, Section 3.c should be deleted.

nical tasks (e.g., set up, maintenance) and operational tasks (e.g., prepare, deliver messages).

2. *Negotiating an agreement with the operator of a Travelers Information Station to move his station from its normal location to an emergency one is more difficult than negotiating a simple emergency-use agreement. Some operators will not agree to such a move because they will not be able to maintain their own operations or because of possible damage to their equipment. Some systems cannot be moved because of their complexity. A relocation agreement should generally provide for replacing or repairing damaged equipment. It is also necessary to maintain equipment and supplies necessary for operation in an emergency location (e.g., an antenna mount for a whip antenna, or an alternate antenna cable; microphone and portable tape cartridge recorder; batteries).*

3. *Requirements for message preparation and delivery are identical to those for fixed Travelers Information Stations. In addition, it is necessary to place signs indicating that a station is in operation. One sign should be placed 1 mile before the beginning of coverage (for 55 mile speeds) or closer (for street speeds and congested areas). Another sign should be placed at the beginning of coverage. A third sign should indicate the end of coverage.*

4. ROLE OF DCPA

a. DCPA will provide technical assistance in planning for the emergency use of Travelers Information Stations. Such assistance should be requested through the state civil preparedness agency, which will forward the request to the nearest DCPA Region Office.

b. DCPA will provide technical assistance in preparing licenses applications for stockpiled or alternately licensed Travelers Information Stations. Requests should be forwarded through the state civil preparedness agency to the nearest DCPA Region Office.*

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*If TIS Rules and Regulations are not revised to allow stockpiling or alternate licensing, Section 4.b should be deleted and subsequent sections renumbered accordingly.

c.* DCPA maintains a limited number of Travelers Information Stations for use in emergency operations. Requests for such stations should be routed to the state civil preparedness agency, which should forward them on an expedited basis to the nearest DCPA Region Office. One or two stations can generally be available within 24 hours after a request has been made. Requestors will be required to file a brief evaluation of both the utility of the TIS system and on the performance of the particular equipment supplied. An evaluation form will be supplied to simplify filing the required reports. The completed form must be returned within 30 days after the end of the emergency.

d.**DCPA will provide matching funds contributions to assist in acquisition of TIS support equipment for fixed or alternately licensed stations (e.g., portable tape cartridge recorder, microphone). DCPA will provide matching funds support for acquiring stockpiled Travelers Information Stations. All requests must be justified as required by the DCPA Federal Assistance Handbook (CPG-1-3) and Emergency Communications (CPG 1-18).

e.** Because of their limited range, DCPA will provide matching funds support for the purchase of 100 milliwatt unlicensed stations only under special circumstances, which adequately justify their use. DCPA will not normally provide matching funds to help in the acquistion of permanently installed Travelers Information Stations. Funds for such installations are generally available under a number of U.S. Department of Transportation programs.

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*If the recommended program of stockpiling TIS systems is not approved, Section 4.c should be deleted, and subsequent sections renumbered accordingly.

**If recommendations on matching funds are not adopted, Sections 4.d and 4.e should be changed to reflect the policies actually adopted.

APPENDIX D

DISTRIBUTION OF CB LICENSES

Table D-1. CB Licenses Ranked by State

Rank by CB Licenses	State	Number of Licenses	Rank by Population	Rank by CB Licenses	State	Number of Licenses	Rank by Population
1	Texas	910,299	3	26	Washington	164,729	22
2	California	659,402	1	27	South Carolina	155,305	26
3	Ohio	622,010	6	28	Colorado	145,902	28
4	New York	546,838	2	29	Arkansas	139,618	33
5	Pennsylvania	543,869	4	30	West Virginia	136,957	34
6	Illinois	542,987	4	31	Mississippi	123,198	29
7	Michigan	482,959	7	32	Connecticut	121,050	24
8	Florida	450,978	8	33	Oregon	118,146	30
9	Indiana	330,640	12	34	Arizona	116,501	32
10	North Carolina	316,451	11	35	Nebraska	115,037	35
11	Missouri	309,946	15	36	New Mexico	70,060	37
12	Virginia	301,008	13	37	Maine	60,989	38
13	New Jersey	280,595	9	38	South Dakota	54,421	44
14	Georgia	273,826	14	39	Utah	50,592	36
15	Tennessee	244,850	17	40	North Dakota	48,516	45
16	Iowa	210,240	25	41	New Hampshire	47,656	42
17	Louisiana	210,150	20	42	Montana	46,672	43
18	Alabama	209,144	21	43	Idaho	45,987	41
19	Oklahoma	207,841	27	44	Nevada	34,359	
20	Wisconsin	207,033	16	45	Wyoming	33,175	49
21	Kentucky	204,197	23	46	Delaware	30,412	47
22	Maryland	191,053	18	47	Rhode Islnad	27,640	39
23	Massachusetts	188,597	10	48	Alaska	26,790	50
24	Minnesota	186,138	19	49	Vermont	26,580	48
25	Kansas	171,717	31	50	Hawaii	13,841	40
				Total		10,859,227*	

*The total includes 53,318 licenses containing no Zip Code; 30,289 licenses in Washington, D.C.; and 18,719 licenses in Puerto Rico and the Virgin Islands.

Source: FCC License statistics assembled by the Citizens Band Radio Project, Denver Research Institute, Denver Colorado.

Table D-2. Density of CB Licenses per 1,000 Population

Rank by Density	State	Licenses per 1,000	Rank in Population	Rank by Density	State	Licenses per 1,000	Rank in Population
1	Wyoming	88.70	49	26	Vermont	56.43	48
2	South Dakota	79.68	44	27	Idaho	55.85	41
3	Oklahoma	76.64	27	28	Georgia	55.59	14
4	North Dakota	76.40	45	29	Louisiana	55.43	20
5	Alaska	76.11	50	30	South Carolina	55.11	26
6	West Virginia	75,96	34	31	Florida	53.96	8
7	Kansas	75.75	31	32	Michigan	52.74	7
8	Nebraska	74.41	35	33	Delaware	52.53	47
9	Texas	74.39	3	34	Mississippi	52.51	29
10	Iowa	73.25	25	35	Arizona	52.38	32
11	Arkansas	65.98	33	36	Oregon	51.64	30
12	Missouri	65.07	15	37	Illinois	48.72	5
13	Montana	62.40	43	38	Minnesota	47.41	19
14	Indiana	62.26	12	39	Maryland	46.62	18
15	New Mexico	61.08	37	40	Washington	46.48	22
16	Virginia	60.60	13	41	Pennsylvania	45.99	4
17	Kentucky	60.13	23	42	Wisconsin	44.94	16
18	Tennessee	58.46	17	43	Utah	41.95	36
19	New Hampshire	58.26	42	44	Connecticut	39.11	24
20	North Carolina	58.05	11	45	New Jersey	38.35	9
21	Nevada	58.04	46	46	Massachusetts	32.36	10
22	Alabama	57.87	21	47	California	31.13	1
23	Ohio	57.81	6	48	New York	30.18	2
24	Colorado	57.78	28	49	Rhode Island	29.82	39
25	Maine	57.59	38	50	Hawaii	16.00	40

Note: Washington, D.C., has a CB license density of 42.30 per 1,000 population.

Source: FCC license statistics assembled by the Citizens Band Radio Project, Denver Research Institute, Denver, Colorado.

APPENDIX E

SUMMARY OF CITIZENS BAND CAPABILITIES AVAILABLE TO STATE POLICE AND STATE HIGHWAY PATROL AGENCIES

State[1]	Cars	State Equipped Cars	Allow Officers to Install?	Officer Equipped Cars	Base Stations	Special[2] Vehicles	Future Plans
Alabama	350	c. 300	Yes	c. 35	18 Posts	1 MCC	
Alaska	325	25	Yes	5	None	11 4WDs	
Arizona	c. 500	Nonc	Yes	270	None	None	
Arkansas	Unk	None	Yes	Unk	None	Unk	
California	1976	900	Yes	Unk	None	Unk	Evaluation in progress; considering installing base stations at weight stations
Colorado	400	None	Yes	c. 200	3 Officers	Unk	
Connecticut	900	8	Yes	c. 50	8 Troops (of 12)	None	Applying for NEAR funds to equip all cars
Deleware	323	10	Yes	50	HQ; 5 Troops (of 8)	1 MCC	Plan to install CB in 150 cars during next 18 mo.
Florida	1,200	None	Yes[3]	Unk	None	Unk	CB being tested on Florida Turnpike
GEORGIA	500	500	-	-	15 Posts (of 45)	1 MCC	
Idaho	165	None	Yes	c. 50	None	None	
ILLINOIS	1,750[4]	1,750[4]	-	-	45 Areas, Districts, Weigh Stations	4 MCCs	NEAR program also involves installation for local governemnts
Indiana	1,000	None	Yes	500	HQ; 19 Districts	None	Plan to install CB in 100 cars
IOWA	430	430	-	-	14 Districts	1 MCC	
Kansas	409	None	Yes	175	6 Divisions (of 7); 1 District	None	Evaluating base stations before developing policy on mobile units
Kentucky	1,000	25	Yes	100	16 Posts	None	
Louisiana	600	None	Yes	400	11 Troops	None	
MAINE	200	200	-	-	None	Unk	
Maryland	1,200	Unk	Yes	250	2 Barracks	2 MCCs	
Massachusetts	811	None	Yes	Unk	None	None	

State[1]	Cars	State Equipped Cars	Allow Officers to Install?	Officer Equipped Cars	Base Station	Special[2] Vehicles	Future Plans
Michigan	645	[5]	Yes	[5]	57 Posts	None	
Minnesota	504	11	Yes	116	11 District Communication Ctrs	1 MCC	Grant request to NHTSA for funds to equip 150 cars
MISSISSIPPI	475	375[6]	-	-	HQ; 9 District Substations; c.150 Police, Fire, Sheriff's Departments	1 MCC	
MISSOURI	826	740[6]	-	-	60 Troops, weight Stations, 3 Remote Bases on Interstate	None	Testing remote bases on Interstate
Montana	180	[7]	Yes	[7]	7 Troops	Unk	
Nebraska	317	None	Yes	216	HQ; 5 Troops; 4 Posts	1 MCC	
Nevada	155	None	Yes	50	None	None	
New Hampshire	248	None	Yes	71	1 Substation	None	Grant for a base at each Substation
New Jersey	1,200	None	No Policy	Unk	2 Stations	1 MCC	
New Mexico	335	23	Yes	136	None	None	
New York	700	155	Yes	Unk	22 Officers	Unk	Experimental program in 7-county area
North Carolina	1,150	12	Yes	350	None	1 MCC	
North Dakota	95	50	Yes	45	None	None	
OHIO	950	950	-	-	57 Posts	1 MCC	
Oklahoma	550	None	Yes	330	None	Unk	
Oregon	500	100	No	None	18 Offices on major through highways	None	
Pennsylvania	1,800	23	Yes	50-75	1 Station	10 MCCs and Temporary MCCs	Testing base at Station; plan to equip 84 Stations

State[1]	Cars	State Equipped Cars	Allow Officers to Install?	Officer Equipped Cars	Base Stations	Special[2] Vehicles	Future Plans
Rhode Island	Unk	None	No	None	None	None	
South Carolina	700	700	No	None	16 Dispatch Centers	Unk	
SOUTH DAKOTA	175	170[6]	-	-	6 Districts	None	
TENNESSEE	500	500	-	-	8 Districts	1 MCC	
Texas	908	25	Yes	400-500	4 Dispatch Centers	None	Testing bases installed at Dispatch Centers
Utah	325	2	Yes	139	None	Unk	
Vermont	225	4	Yes	46	None	5 4WDs	Plan to install CB in all cars
Virginia	Unk	Unk	No	None	Unk	None	Testing feasibility of using CB; until test is completed no other CB sets are allowed
Washington	775	35	Yes	150	5 Dispatch Centers in eastern Washington	Unk	
WEST VIRGINIA	380	380	-	-	None	16 4WDs	
Wisconsin	376	155	Yes	50	7 Districts (of 8)	1 MCC	
WYOMING	142	142	-	-	2 Offices	None	

Key: c.- About; Unk - Unknown

1 Excludes Hawaii, which does not have a state police/state patrol agency. States on CAPITAL LETTERS have equipped all their patrol cars with CB transceivers.

2 MCC - Mobile command/communications center; 4WD - 4-wheel-drive vehicle; other types of special vehicles were not tabulated.

3 On Florida Turnpike only.

4 Includes 60 Secretary of State cars; 100 Department of Natural Resources cars.

5 c.100 state-installed and officer-installed CB units.

6 All patrol units in state.

7 30 state-installed and officer-installed CB units.

APPENDIX F

PARTIAL INVENTORY OF TRAVELERS INFORMATION STATIONS

The following list of TIS is based upon orders placed with suppliers of Travelers Information Stations. Not all stations are in service. Locations indicated are usually headquarters facilities; locations of actual installations may be different. Unless indicated by an asterisk (*) systems employ monopole antennas; the asterisk indicates cable antenna systems. Information is correct as of November 30, 1977.

State	Location	Agency	No. of Transmitters
Alaska	Unknown	U.S. Customs	1
Arizona			
	Flagstaff	Coconino National Forest	1
	Grand Canyon	Grand Canyon National Park	2
	Nogales	U.S. Customs Bureau	1
	Springerville	Apache-Sitgreaves National Forest	1
California			
	Happy Camp	Klamath National Forest	1
	Los Angeles	Los Angeles Department of Airports	1
	Los Angeles	U.S. Customs Bureau	1
	Nevada City	Tahoe National Forest	1
	Oroville	Plumas National Forest	1
	Pasadena	Angeles National Forest	2
	Redding	Shasta-Trinity National Forest	1
	Riverside	Bureau of Land Management	2
	San Bernardino	San Bernardino National Forest	1
	San Ysidro	U.S. Customs Service	1
	Three Rivers	Sequoia-Kings Canyon National Park	1
	Weaverville	Shasta-Trinity National Forest	1
Colorado			
	Colorado Springs	U.S. Air Force Academy	1
	Denver	National Park Service	1
	Estes Park	Rocky Mountain National Park	1

State	Location	Agency	No. of Transmitters
District of Columbia			
	Washington	Federal Aviation Administration	2
Florida			
	Homestead	Everglades National Park	2
	Cape Kennedy	John F. Kennedy Space Center	1
Georgia			
	Marietta	Kennesaw Mountain National Battle Park	2
Iowa			
	Ames	State Department of Transportation	2
Kentucky			
	Park City	Mammouth Cave National Park	1
Michigan			
	Frankfort	Sleeping Bear Dunes National Lakeshore	1
Minnesota			
	International Falls	Voyageurs National Park	1
Missouri			
	Van Buren	Ozark National Scenic River	4
	Wappapelle	U.S. Army Corps of Engineers	1
Montana			
	Bozeman	Gallatin National Forest	3
	Helena	State Highway Commission	Unk.
	West Glacier	Glacier National Park	1

State	Location	Agency	No. of Transmitters
Nevada			
	Ely	Humboldt National Forest	1
New Hampshire			
	Laconia	White Mountain National Forest	1
New Jersey			
	Oceanville	Bureau of Sports Fisheries	1
New Mexico			
	Alamagordo	Lincoln National Forest	1
	Alamagordo	White Sands National Monument	2
	Carlsbad	Carlsbad Caverns National Park	2
	Cloudcroft	Lincoln National Forest	1
	San Antonio	Bosque Del National Wildlife Refuge	
	Santa Fe	Bureau of Land Management	1
North Carolina			
	Ashville	Blue Ridge Parkway	1
Oregon			
	Portland	U.S. Army Corps of Engineers	10
	Roseburg	Umpqua National Forest	1
Pennsylvania			
	Philadelphia	Delaware Valley Regional Planning Commission	5*
	Philadelphia	Delaware Valley Regional Planning Commission (Walt Whitman Bridge)	1*
	Warren	Allegheny National Forest	1

State	Location	Agency	No. of Transmitters
South Dakota			
	Hermosa	Custer State Park	4
Tennessee			
	Burns	Montgomery Bell State Park	1
	Gatlinburg	Great Smokey Mountains National Park	5
Texas			
	Alpine	Big Bend National Park	1
	Fort Worth	U.S. Army Corps of Engineers	1
	Houston	City of Houston	1
Utah			
	Dutch John	Ashley National Forest	1
	Ogden	Cache National Forest	1
	Salt Lake City	Bureau of Land Management	2
	Salt Lake City	Bureau of Sport Fisheries and Wildlife	1
Virginia			
	Wallops Island	National Aeronautics and Space Administration-Wallops Flight Center	1
Washington			
	Bridgeport	U.S. Army Corps of Engineers	1
Wisconsin			
	Rhinelander	Nicolet National Forest	1
Wyoming			
	Devils Tower	Devils Tower National Monument	1
	Lander	Bureau of Land Management	2
	Laramie, Walcott Junction	State Highway Department	4*
	Yellowstone	Yellowstone National Park	41

APPENDIX G

QUESTIONNAIRES USED IN STUDY
OF CITIZENS BAND RADIO SERVICE

OMB NO. 120-S77001
Approval Expires April, 1977

CITIZENS BAND STUDY

STATE CIVIL PREPAREDNESS AGENCY QUESTIONNAIRE

STATE ______________________________

Person Filling Out Questionnaire

Name ______________________________

Title ______________________________

Address ______________________________

City, State ______________________ Zip ________

Telephone No. ( ) ______________________________

INSTRUCTIONS

The following questions are designed to obtain information from you on Citizen Band (CB). The information you supply will be used in a study of CB being performed by System Development Corporation for the Defense Civil Preparedness Agency (DCPA).

This questionnaire is authorized by law (50 U.S.C. App. 2253 and 2281; E.O. 10952). While your response is voluntary, your cooperation is needed to complete this survey. Please be candid in expressing your opinions, since good answers to this questionnaire are critically important to the adequacy of our recommendations to DCPA.

If any of your answers exceed the space allowed, please use the back of the page. In order for us to complete the processing of this questionnaire, please return it in the enclosed self-addressed, stamped envelope by ________________.

Completed questionnaires should be mailed to:

Murray Rosenthal
System Development Corporation
2500 Colorado Avenue
Santa Monica, California 90406

PRECEDING PAGE BLANK

YOUR AGENCY'S CB CAPABILITIES

1. Does your state civil preparedness agency: (Please check one of the following.)

_____Currently have any CB base stations, mobile units, or hand-held units

_____Currently have CB equipment, but plan to upgrade its existing capabilities

_____Plan to acquire CB equipment in the future

_____None of the above

(Note that if you indicate your agency has CB equipment, we will interpret your response as indicating your agency has equipment in place, personnel assigned, etc. If you indicate you are planning to acquire or upgrade CB, we will interpret your response to mean that your agency is involved in the acquisition of equipment, assignment of personnel, etc.)

2. If your agency is neither currently prepared to use CB or planning for the future use of CB, please explain why not.

____

____

____

IF YOUR CIVIL PREPAREDNESS AGENCY DOES NOT HAVE OR PLAN TO HAVE ANY CB EQUIPMENT, PLEASE SKIP TO QUESTION 14.

3. Does your civil preparedness organization have a written plan and/or standing operating procedures for using CB in emergencies?

_____Yes _____No

If you have a CB plan and/or standing operating procedure, please send us copies of them. Please indicate whether you wish them returned.

4. If your agency is either prepared to use CB or is planning for the use of CB in emergencies, is CB intended for: (Please check all applicable responses.)

_____ Facilitating communications with volunteer support groups (such as search and rescue teams, 4-wheel drive clubs, CB clubs, etc.)

_____ Making contact with members of the public in CB-equipped vehicles

_____ Providing intra- or interagency communications (as a supplement to Public Safety or Local Government land-mobile radio channels)

_____ Other

5. If other, please explain. ____

____

____

6. How much CB equipment do you currently own or plan to acquire? (Please enter the number of CB radios owned or planned for in the following table.)

Type of CB Radio	Number Owned	Number Planned
Base Stations		
Mobile Units		
Handheld Units		

7. If you plan to acquire additional CB equipment, when will it be available?

____

8. Please indicate how your CB equipment is deployed (e.g., permanently installed in your emergency operations center, preinstalled in a mobile command post, mounted in staff vehicle, stockpiled for installation as needed, etc).

____

____

____

9. At the present time the predominant uses of CB are in the form of amplitude modulated (AM) transmissions in the 27 MHz band (Class D). However, some more limited uses of CB are in the form of: (1) single sideband (SSB) transmissions in the 27 MHz band (also Class D), and (2) frequency modulated (FM) transmissions in the 460 MHz band (Class A). If in Question 4, you indicated that your agency owns or is planning to acquire CB equipment, please indicate whether CB means Class D-AM, Class D-SSB, Class A, or a combination of these. (Please check all that apply.)

_____Class D-AM

_____Class D-SSB

_____Class A

10. If you use (or plan to use) Class D-SSB or Class A, what applications do you make of it?

____

____

____

STATE CB EXPERIENCE

11. If your agency currently has a CB capability, what are its actual and anticipated applications? (Please check all applicable boxes.)

Applications	Have Actually Used CB	Will Use CB When Needed
Weather Watches		
Natural Disaster Operations		
Industrial, Transportation Accident Operations		
Search and Rescue Missions		
Public Functions, Parades, Fairs, Etc.		
Other		

12. If other, please explain. ____

____

____

13. If your state civil preparedness agency has used CB in emergency operations, please give an example of a recent use. Provide a brief description of the emergency, including date and location; damage, if any, including losses to life and property; extent and nature of CB use; net structure; identities of other CB organizations participating and approximate number of CB radios used by each; your overall evaluation of CB effectiveness in the emergency; and other comments, as appropriate. (If you want to describe additional emergencies in which your organization used CB, please do so. If you need additional space, please use the back of the page or additional pages, as necessary.)

____

____

____

____

____

____

NONGOVERNMENT CB SUPPORT

14. Does your state civil preparedness agency have working arrangements to obtain emergency support from nongovernment CB groups such as REACT and ALERT?

_____Yes _____No

15. If yes, please complete the table on page 6.

If you have written working agreements with any of these CB groups, please send us copies of these agreements. Please indicate whether you wish them returned.

16. Have you used (or do you plan to use) individual CB operators or CB organizations who make themselves available without prior arrangement in an emergency? Check one of the following:

_____Have used in the past; will continue to use in the future

_____Have used in the past; will not use in the future

_____Have not used in the past; will use in the future, if available

_____Have not used in the past; and will not use in the future

Question 15. Support from Nongovernment CB Groups

NAME OF CB GROUP AND NAME OF CONTACT	MAILING ADDRESS OF CONTACT	FUNCTION TO BE PERFORMED	FORMAL OR INFORMAL AGREE-MENT*	AMOUNT OF SUPPORT**

*Indicate whether you have a formal (written) or an informal (oral) working agreement.
**Enter 1, if active support: 2, if limited support; 3, if planning to be active.

17. Please explain your answer to Question 16.______________________________

____

____

CB USE BY OTHER AGENCIES IN YOUR STATE

18. Is any other state agency in your state (such as the State Patrol, State Highway Department, State Fish and Game Department, etc.) planning to use CB?

_____Yes _____No

19. If yes, please identify the agency or agencies and the purposes for which each agency is using CB.

- State Agency______________________________________

  Purposes for Using CB______________________________

  ____

  ____

  ____

  ____

- State Agency______________________________________

  Purposes for Using CB______________________________

  ____

  ____

  ____

  ____

- State Agency______________________________________

  Purposes for Using CB______________________________

  ____

  ____

  ____

  ____

If more than three other state agencies are using or planning to use CB, please use the back of the page to record the information we are requesting.

FEDERAL ROLE IN CB

20. In your judgment, should tighter control be exercised over the use of CB channels, especially in emergencies?

_____Yes _____No

21. Please explain your answer to Question 20. ______________________________

____

____

22. If your answer to Question 20 was yes, how should that control be effected?

____

____

____

23. Should DCPA seek to initiate a special emergency service *within* the Citizen's Radio Service (similar to RACES with the Amateur Radio Service)?

_____Yes _____No

24. If yes, what general types of regulations should goven this special emergency service?

____

____

____

25. If your answer to Question 23 was no, why not? ___________________________

____

____

26. Should DCPA provide guidance on or technical assistance in the use of CB in emergencies?

_____Yes _____No

27. If yes, what types of guidance materials or technical assistance would be most useful?

____

____

____

28. Should DCPA attempt to develop any state, regional, or national organizations to further the use of CB during emergencies?

_____Yes _____No

29. If yes, what type of functions should such organizations perform, and how should they be structured?

____

____

____

30. If no, why not? ____

____

CB BENEFITS AND DISADVANTAGES

31. In your opinion, what are the major benefits and disadvantages of CB in state civil preparedness operations?

____

____

____

____

32. How could the benefits be expanded and the disadvantages minimized?

____

____

____

33. Please provide any additional information on or evaluations of CB emergency applications you may feel appropriate.

LOCAL JURISDICTIONS

34. Please supply us with the names of four cities and counties in your state which have effective CB programs and to which we can send questionnaires on CB. In general, the four jurisdictions should be as follows: (If the jurisdictions with effective CB programs in your state do not correspond to our four population size categories, please send us information on the four jurisdictions in your state best illustrating effective use of CB in emergencies.)

- Most populous jurisdiction in your state having an effective capability to use CB in civil preparedness operations. (If the largest jurisdiction is likely to be uncooperative, please supply us with the name of another large jurisdiction with an effective CB capability.)

  Name of Jurisdiction ______________________________

  Name of Person to Contact ______________________________

  Address ______________________________

  ______________________________ Zip ______________

  Telephone No. ( ) ______________________________

- City or county containing the state capitol. (If this jurisdiction does not have an effective capability to use CB in civil preparedness operations, please substitute another jurisdiction with a medium-sized population.)

  Name of Jurisdiction ______________________________

  Name of Person to Contact ______________________________

  Address ______________________________

  ______________________________ Zip ______________

  Telephone No. ( ) ______________________________

- Another representative jurisdiction in your state with a medium-sized population (excluding jurisdiction containing state capitol).

  Name of Jurisdiction ______________________________

  Name of Person to Contact ______________________________

  Address ______________________________

  ______________________________ Zip ______________

  Telephone No. ( ) ______________________________

• Representative jurisdiction in your state with a small-sized population.

Name of Jurisdiction____

Name of Person to Contact____

Address____

____Zip_______________

Telephone No. (   )____

35. May we indicate that the state civil preparedness agency suggested that we contact the jurisdictions you have indicated?

_____Yes _____No

PLEASE DON'T FORGET COPIES OF CB PLANS AND OTHER MATERIALS REQUESTED IN QUESTIONS 3 AND 14-15.

THANK YOU FOR YOUR ASSISTANCE.

OMB NO. 120-S77001
Approval Expires April, 1977

CITIZENS BAND STUDY

LOCAL CIVIL PREPAREDNESS AGENCY QUESTIONNAIRE

JURISDICTION ______________________

Person Filling Out Questionnaire

Name ______________________

Title ______________________

Address ______________________

City, State ______________________ Zip __________

Telephone No. (   ) ______________________

INSTRUCTIONS

The following questions are designed to obtain information from you on Citizen Band (CB). The information you supply will be used in a study of CB being performed by System Development Corporation for the Defense Civil Preparedness Agency (DCPA).

Please answer as many of our questions as are applicable to your jurisdiction. Few, if any, local civil preparedness agencies will be able to answer all of the questions. Where specific responses are not practical, please give us your best approximations. We estimate that it will take you about one hour to complete your response.

This questionnaire is authorized by law (50 U.S.C.App. 2253 and 2281; E.O. 10952). While your response is voluntary, your cooperation is needed to complete this survey. Please be candid in expressing your opinions, since good answers to this questionnaire are critically important to the adequacy of our recommendations to DCPA.

If any of your answers exceed the space allowed, please use the back of of the page. In order for us to complete the processing of this questionnaire, please return it in the enclosed self-addressed, stamped envelope by
______________________.

Completed questionnaires should be mailed to:

Murray Rosenthal
System Development Corporation
2500 Colorado Avenue
Santa Monica, California 90406

YOUR AGENCY'S CB CAPABILITIES

1. Is your civil preparedness agency: (Please check one of the following.)

_____Currently prepared to use CB

_____Currently prepared to use CB, but planning to upgrade its existing capabilities

_____Planning for the future use of CB

_____None of the above

(Note that, in this question and throughout this questionnaire, if you indicate your agency is prepared to use CB, we will interpret your response as indicating your agency has equipment installed, personnel recruited, etc. If you indicate you are planning to use or upgrade CB, we will interpret your response to mean that your agency will have new or augmented CB capabilities in the near future, and it is currently preparing budgets, acquiring equipment, recruiting personnel, etc.)

2. If your agency is not currently prepared to use CB or planning for the future use of CB, please explain why not.

____

____

____

IF YOUR CIVIL PREPAREDNESS AGENCY DOES NOT HAVE OR PLAN TO HAVE A CB CAPABILITY, PLEASE SKIP TO QUESTION 36.

3. If your agency is either prepared to use CB or is planning for the use of CB in emergencies, is CB intended for: (Please check all applicable responses.)

_____Making contact with members of the public in CB-equipped vehicles

_____Providing intra- or interagency communications (as a supplement to or replacement for Public Safety or Local Government land-mobile radio channels)

_____Facilitating communications with volunteer support groups (such as search and rescue teams, 4-wheel drive clubs, CB clubs, etc.)

_____Other

4. If other purposes, please explain______________________________

____

____

____

5. If your civil defense agency is using, or planning to use, CB, has it: (Check all of the following that are applicable.)

_____ Set up its own CB organization (i.e., recruited its own CB volunteers, who will provide CB support under the direct supervision of your agency)

_____ Established working arrangements for CB support with local, nongovernment CB groups such as REACT and ALERT (i.e., has not recruited its own volunteers, but is depending on other organizations to do so)

_____ Assigned responsibility for CB to its staff personnel without either recruiting its own CB volunteers or establishing working arrangements with non-government CB groups

_____ Other

_____ Not yet determined what forms of CB organization to use.

6. If you checked Other in Question 5, please explain. ____________________

____

____

Please enclose an organization chart or table of organization showing the relationships between your overall agency structure, your communications staff, and your CB capability. If it is more convenient, you can draw a rough organization chart on the back of this page.

7. Does your civil preparedness agency have a written plan and/or standing operating procedures for using CB in emergencies?

_____ Yes

_____ Being prepared

_____ Being revised

_____ No

8. If yes, when were the plan and/or procedures prepared? (If the plan and/or procedures are currently being prepared, please indicate the expected completion date. If the plan and/or procedures have been, or are currently being updated, please indicate the date, or the expected completion date, of the update.)

____

____

Please furnish us with copies of your CB plan and any other CB-related material your agency may have prepared. Indicate which material, if any, you wish returned to you.

CB EXPERIENCE

9. What are your agency's actual and anticipated applications for CB? (Please check all applicable boxes.)

Applications	Have Actually Used CB	Will Use CB When Needed
Weather Watches		
Natural Disaster Operations		
Industrial, Transporation Accident Operations		
Search and Rescue Missions		
Public Functions, Parades, Fairs, Etc.		
Other		

10. If other, please explain. ____

____

____

____

11. If your civil preparedness agency has used CB in emergency operations, please give an example of a recent use. Provide a brief description of the emergency, including date and location; damage, if any, including losses to life and property; extent and nature of CB use; net structure; identities of other CB organizations participating and approximate number of CB radios used by each; your overall evaluation of CB effectiveness in the emergency; and other comments, as appropriate. (If you want to describe additional emergencies in which your organization used CB, please do so. If you need additional space, please use the back of the page or additional pages, as necessary.)

____

____

____

____

____

____

____

____

CB PERSONNEL

12. Approximately how many persons operate your agency's CB capabilities?

_____Number of paid staff members

_____Number of volunteer personnel serving without pay

(Please count all people who would spend a significant part of their time during an emergency on CB communications. Do not include people who are part of nongovernment CB groups not subject to direct supervision by your agency.)

13. If your CB personnel are primarily volunteers, do you have a program to recruit new volunteers?

_____Yes _____No

14. If yes, please describe your program. ______________________________

____

____

____

____

15. If your CB personnel are primarily volunteers, or if you make use of nongovernment CB groups, does your agency have a training program for them?

_____Yes _____No

16. If yes, please describe your training program (including types of training, training plans, frequency and duration of training sessions, etc.)

____

____

____

17. Have you used (or do you plan to use) individual CB operators or nongovernment CB groups who make themselves available without prior arrangement in an emergency? Check one of the following:

_____Have used in the past; will continue to use in the future

_____Have used in the past; will not use in the future

_____Have not used in the past; will use in the future, if available

_____Have not used in the past; and will not use in the future

NONGOVERNMENT CB GROUPS

18. Does your agency have working arrangements to receive emergency support from nongovernment CB groups such as REACT and ALERT?

_____Yes _____No

19. If yes, please complete the forms which are included at the end of this questionnaire. We have provided forms for up to three CB groups. If you need additional forms, please copy those we have supplied.

CB DISCIPLINE

20. If your civil preparedness agency depends primarily on volunteers for CB communications, or if it makes use of nongovernment CB groups, in your opinion, to what extent can your agency maintain operational discipline with nonprofessional personnel?

_____Always

_____Sometimes

_____Rarely

(By "operational discipline," we mean your agency's ability to get volunteers to a particular location when they are needed and in the numbers needed, as well as your agency's ability to keep volunteers from going to locations in which their presence is undesirable.)

21. If good operations discipline is not always maintained, why do failures occur and how can they be minimized?

____

____

____

22. If your agency depends primarily on volunteers for CB communications, or if it makes use of nongovernment CB groups, in your opinion, to what extent can your agency maintain communications discipline with nonprofessional personnel?

_____Always

_____Sometimes

_____Rarely

(By "communications discipline," we mean your agency's ability to handle CB traffic in a prompt, reliable, error-free manner.)

23. If good communications discipline is not always maintained, why do failures occur and how can they be minimized?

____

____

____

24. How do you establish net control for CB operations from a fixed location such as your local EOC?

____

____

____

25. How do you establish net control for CB operations from a temporary field location such as the scene of a disaster?

____

____

____

CB RELIABILITY

26. In your opinion, how serious is the problem of erroneous and false reports from CB users?

____

____

____

27. Has your agency had any operational experience with efforts to clear CB channels for emergency traffic?

_____Yes _____No

28. If yes, how effective, in your opinion, have these efforts been, what problems were experienced, and what measures were taken to correct them?

____

____

____

29. Has your agency found that CB users are attracted to the scene of an emergency by information transmitted over CB channels?

_____Yes   _____No

30. If yes, how serious, in your opinion, have these problems been and what measures have been taken to correct them?

____

____

____

CB EQUIPMENT

31. How much CB equipment do you currently own or plan to acquire? (Please enter the number of CB radios owned or planned for in the following table.)

Type of CB Radio	Number Owned	Number Planned
Base Stations		
Mobiles Units		
Handheld Units		

32. If you plan to acquire additional CB equipment, when will it be available?

____

33. Please indicate how your CB equipment is deployed (e.g., permanently installed in your emergency operations center, preinstalled in a mobile command post, mounted in staff vehicle, stockpiled for installation as needed, etc.).

____

____

____

34. At the present time, the predominant uses of CB are in the form of amplitude modulated (AM) transmissions in the 27 MHz band (Class D). However, some more limited uses of CB are in the form of: (1) single sideband (SSB) transmissions in the 27 MHz band (also Class D), and (2) frequency modulated (FM) transmissions in the 460 MHz band (Class A). Please indicate whether your agency is using, or planning to use, only Class D-AM equipment, or whether it is also using (or planning to use) Class D-SSB and/or Class A equipment. (Please check all that apply.)

_____Class D-AM

_____Class D-SSB

_____Class A

35. If you use, or plan to use, Class D-SSB or Class A equipment, what applications do you (or will you) make of it?

____

____

____

CB USE BY OTHER AGENCIES IN YOUR JURISDICTION

36. Is any other agency in your jurisdiction (such as the Sheriff, Police Department, Highway Department, etc.) using, or planning to use, CB?

_____Yes _____No

37. If yes, please identify the agency or agencies and the purposes for which each agency is using CB.

- Agency________________________________

  Purposes for Using CB__________________

  ____

  ____

  ____

  ____

- Agency ____

  Purposes for Using CB ____________________________

  ____

  ____

  ____

  ____

- Agency ____

  Purposes for Using CB ____________________________

  ____

  ____

  ____

  ____

If more than three other local agencies are using or planning to use CB, please use the back of the page to record the information we are requesting.

FEDERAL ROLE IN CB

38. In your opinion, are additional Class D CB channels required?

_____Yes _____No

39. Please explain your answer to Question 38. ______________________________

____

____

40. In your opinion, is additional CB service needed (e.g., 220 MHz FM)?

_____Yes _____No

41. Please explain your answer to Question 40. ______________________________

____

____

42. In your judgment, should tighter control be exercised over the use of CB channels, especially in emergencies?

_____Yes _____No

43. Please explain your answer to Question 42. ______________________________

____

____

44. If your answer to Question 42 was yes, how should that control be effected?

____

____

____

45. Should DCPA seek to initiate a special emergency service within the Citizen's Radio Service (similar to RACES with the Amateur Radio Service)?

_____Yes _____No

46. If yes, what general types of regulations should govern this special emergency service?

____

____

____

47. If your answer to Question 45 was no, why not? __________________________

____

____

48. Should DCPA provide guidance material and technical assistance on the use of CB in emergencies?

_____Yes _____No

49. If yes, what types of guidance materials and technical assistance would be most useful? ____

____

____

50. If no, why not? ____

____

____

51. Should DCPA attempt to develop any state, regional, or national organizations to further the use of CB during emergencies?

_____Yes _____No

52. If yes, what type of functions should such organizations perform, and how should they be structured?

____

____

____

53. If no, why not? ____

____

____

CB BENEFITS AND DISADVANTAGES

54. In your opinion, what are the major benefits and disadvantages of CB in civil preparedness operations?

____

____

____

____

55. How could these benefits be expanded and the disadvantages be minimized?

56. Please provide any additional information on CB applications to civil preparedness operations you may feel appropriate.

PLEASE DON'T FORGET COPIES OF CB PLANS AND OTHER MATERIALS REQUESTED IN QUESTIONS 5-6, 7-8, AND 18-19.

THANK YOU FOR YOUR ASSISTANCE

RESPONSE TO QUESTION 19. NONGOVERNMENT CB GROUPS

Name of CB Group____

Contact (Name, Address, Tel. No.)________________________________

____

____

Emergency Services to be Performed_______________________________

____

____

____

Approximate Number of Active Members_____________________________

Approximate Amount of CB Equipment Available:

Base Stations____________________

Mobile Units_____________________

Handheld Units___________________

Other Emergency Equipment Available (e.g., generators, resuscitators, etc.)

____

____

____

Do you have a formal working agreement with this group? _____Yes _____No

Please send us any additional information you may have on the above group. We would be interested in a copy of a formal working agreement (if you have such an agreement), operations plans, organization chart, newspaper articles, etc. Please indicate which materials, if any, you want returned to you.

OMB NO. 120-S77001
Approval Expires April, 1977

CITIZENS BAND STUDY

STATE PATROL/STATE POLICE QUESTIONNAIRE

STATE ______________________________

Person Filling Out Questionnaire

Name ______________________________

Title ______________________________

Address ______________________________

City, State ______________________________ Zip ________

Telephone No. (   ) ______________________________

INSTRUCTIONS

The following questions are designed to obtain information from you on Citizen Band (CB). The information you supply will be used in a study of CB being performed by System Development Corporation for the Defense Civil Preparedness Agency (DCPA).

Please answer as many of our questions as are applicable to your state. Few, if any state patrols or state police agencies will be able to answer all of the questions. Where specific responses are not practical, give us your best approximations. We estimate that it will take you about one hour to complete your response.

This questionnaire is authorized by law (50 U.S.C. App. 2253 and 2281; E.O. 10952). While your response is voluntary, your cooperation is needed to complete this survey. Please be candid in expressing your opinions, since good answers to this questionnaire are critically important to the adequacy of our recommendations to DCPA.

If any of your answers exceed the space allowed, please use the back of the page. In order for us to complete the processing of this questionnaire, please return it in the enclosed self-addressed, stamped envelope by ______________________.

Completed questionnaires should be mailed to:

Murray Rosenthal
System Development Corporation
2500 Colorado Avenue
Santa Monica, California 90406

YOUR AGENCY'S CB CAPABILITIES

1. Does your state patrol or state police agency: (Please check all applicable responses.)

_____ Currently own CB equipment

_____ Plan to increase amount of CB equipment owned

_____ Plan to own CB equipment in the near future

_____ Allow agency's officers to install their own CB equipment

_____ None of the above

(Note that if you indicate your agency is planning to acquire CB equipment, we will interpret your response to mean that your agency is actively involved in the preparation of budgets, acquisition of equipment, etc.).

2. If your agency does not currently use CB, plan for the future use of CB, or allow its officers to use CB, please explain why not.

____

____

____

IF YOUR AGENCY DOES NOT OWN OR PLAN TO OWN CB EQUIPMENT, AND DOES NOT ALLOW ITS OFFICERS TO INSTALL THEIR OWN EQUIPMENT, PLEASE SKIP TO QUESTION 64.

3. If your agency is either prepared to use CB or is planning for the use of CB, is CB intended for: (Please check all applicable responses.)

_____ Communicating with members of the public in CB-equipped vehicles

_____ Facilitating communications with volunteer support groups (such as search and rescue teams, 4-wheel drive clubs, CB clubs, etc.)

_____ Other purposes

(Note that in this and subsequent questions, we want you to consider the use of both state-owned and officer-owned equipment.)

4. If you checked other purposes, please explain. ______________________________

____

____

CB EXPERIENCE

5. If your agency currently has a CB capability, what are its actual and anticipated applications? (Please check all applicable boxes.)

Applications	Have Actually Used CB	Will Use CB When Needed
Motorists in Need of Assistance		
Highway Accidents		
Dangerous Highway Conditions		
Traffic Control		
Crime Reports		
Search and Rescue		
Public Functions, Parades, Etc.		
Industrial Accident Operations		
Severe Weather Spotting		
Natural Disaster Operations		
Other		

6. If other, please explain. ______________________________

____

____

7. Do you have reports or tabulations on the number of CB reports received, the number of false reports, and the number of actions taken in response to CB reports?

_____ Yes _____ No

If yes, please send us copies of those reports or tabulations. Indicate whether you want any of them returned.

8. If your agency has used CB for other than routine handling of motorists' requests for assistance and reports of highway situations, please give an example of a recent large-scale emergency application. Provide a brief description of the emergency, including date and location; damage, if any, including losses to life and property; extent and nature of CB use; net structure; identities of other CB organizations participating and approximate number of CB radios used by each; your overall evaluation of CB effectiveness in the emergency; and other comments, as appropriate. (If you want to describe additional emergencies in which your organization used CB, please do so. If you need additional space, please use the back of the page or additional pages, as necessary.)

CB PLANS AND POLICIES

9. Does your agency have a written plan and/or standing operating procedures for using CB? (Please check one of the following.)

_____ Yes

_____ Being Prepared

_____ Being Updated

_____ No

10. If yes, when were the plan and/or procedures prepared? (If they are currently being prepared, please indicate the expected completion data. If they have been, or are currently being, updated, please indicate the date, or the expected completion data, of the update.)

____

____

11. Does your agency have a <u>written</u> policy on proper use of CB by your officers?

_____ Yes _____ No

12. Does your agency have a <u>written</u> policy on officer-owned CB equipment?

_____ Yes _____ No

If you have a written plan and standing operations procedures for using CB, or policies on use of CB or installation of officer-owned CB equipment, please send copies to us. Indicate which material, if any, you wish returned to you.

<u>CB ORGANIZATION</u>

13. Have you modified (or will you modify) your agency's organization to accommodate CB?

_____ Yes _____ No

14. If yes, how? ____

____

____

15. How large is the personnel base currently maintained by your organization to manage and support communications <u>including</u> CB?

_____ Number of sworn personnel

_____ Number of other professionals

_____ Number of technicians

_____ Number of clerical personnel

16. Has your organization added (or will it add) personnel to manage and support CB operations?

_____ Yes _____ No

17. If yes, how many persons has your agency added (or will it add) to manage and support CB operations? (Please enter the requested information in the following table.)

Personal Category	Already Added	To Be Added
Sworn		
Other Professional		
Technician		
Clerical		

18. If you have added (or will add) personnel to manage and support CB operations, what functions do the additional personnel perform?

____

____

____

19. If you plan to add personnel, about when will these additions occur?

____

____

20. Do any other state agencies make some of their personnel available to your agency, as part of their job assignments, to support your agency's CB operations (e.g., to monitor CB as part of their other communications responsibilities)?

_____ Yes _____ No

21. If yes, please indicate the number of personnel involved, the agencies by which they are employed, and their functions in support of your agency.

____

____

22. Do you (or will you) use volunteers in any capacity to support your CB operations?

_____ Yes _____ No

(In this and the following questions, we define volunteers to mean those non-paid persons who assist in your agency's operations during an extended period of time. We specifically exclude motorists in CB-equipped vehicles who report emergencies.)

IF YOU DO NOT USE VOLUNTEER CB OPERATORS, AS DEFINED ABOVE, PLEASE SKIP TO QUESTION 32.

23. If yes, what functions do these volunteers perform? ____________________

____

____

24. How many volunteers are being (or will be) used and in which locations?

____

____

____

25. How do you recrùit volunteers? ____________________________________

____

____

26. How do you train volunteers (including types of training, training plans, frequency and duration of training sessions, etc.)?

____

____

____

27. Have you used (or do you plan to use) individual CB operators or CB organizations who make themselves available without prior arrangement in an emergency? Please check one of the following:

_____ Have used in the past; will continue to use in the future

_____ Have used in the past; will not use in the future

_____ Have not used in the past; will use in the future if available

_____ Have not used in the past; and will not use in the future

CB DISCIPLINE

28. If your agency uses volunteers for CB communications, in your opinion, to what extent can your agency maintain operational discipline with nonprofessional personnel?

_____ Always

_____ Sometimes

_____ Rarely

(By "operations discipline," we mean your agency's ability to get volunteers to a particular location when they are needed and in the numbers needed, as well as your agency's ability to keep volunteers from going to locations in which their presence is undesirable.)

29. If good operations discipline is not always maintained, why do failures occur and how can they be minimized?

____

____

____

30. If your agency uses volunteers for CB communications, in your opinion, to what extent can your agency maintain communications discipline with non-professional personnel?

_____ Always

_____ Sometimes

_____ Rarely

(By "communications discipline," we mean your agency's ability to handle CB traffic in a prompt, reliable, error-free manner.)

31. If good communications discipline is not always maintained, why do failures occur and how can they be minimized?

____

____

____

CB RELIABILITY

32. *In your opinion*, how serious is the problem of erroneous and false reports from motorists and other CB users?

____

____

____

33. Has your agency had any operational experience with efforts to clear CB channels for emergency traffic?

_____ Yes _____ No

34. If yes, how effective, *in your opinion*, have these efforts been, what problems were experienced, and what measures were taken to correct them?

____

____

____

35. Has your agency had any experience with implementing temporary blackouts of "Smokey Reports" (e.g., during efforts to apprehend fugitives)?

_____ Yes _____ No

36. If yes, how effective, *in your opinion*, have these blackouts been, what problems were experienced, and what measures were taken to correct them?

____

____

____

37. Has your agency found that CB users are attracted to the scene of an accident, crime, or other emergency by information transmitted over CB channels?

_____ Yes _____ No

38. If yes, how serious, in your opinion, have these problems been and what measures have been taken to correct them?

____

____

____

CB EQUIPMENT

39. At the present time the predominant uses of CB are in the form of amplitude modulated (AM) transmissions in the 27 MHz band (Class D). However, some more limited uses of CB are in the form of: (1) single sideband (SSB) transmissions in the 27 MHz band (also Class D), and (2) frequency modulated (FM) transmissions in the 460 MHz band (Class A). Please indicate whether you use only Class D-AM equipment or whether you also use Class D-SSB and/or Class A equipment. (Please check all that apply.)

_____ Class D-AM

_____ Class D-SSB

_____ Class A

40. If you use CB Class D-SSB and/or Class A equipment, what applications do you make of it?

____

____

____

41. Which CB channels does your agency routinely monitor and on what schedule?

____

____

42. Approximately how many patrol cars does your agency currently operate?

_____ Total number of patrol cars

43. Approximately how many patrol cars are in operation on each shift? (Please enter the appropriate values in the following table.)

Shift	Week Days	Weekends and Holidays
Day		
Evening		
Night		

44. Approximately how many of your agency's patrol cars are currently equipped with state-owned CB radios?

____Number of patrol cars equipped with state-owned CB radios

IF YOUR ANSWER TO QUESTION 44 INDICATED THAT ALL YOUR AGENCY'S PATROL CARS ARE EQUIPPED WITH STATE-OWNED CB RADIOS, PLEASE SKIP TO QUESTION 50.

45. If any of your agency's patrol cars are not currently equipped with state-owned CB radios, do you plan eventually to equip additional patrol cars with state-owned CB radios?

____Yes ____No

46. If your answer to Question 45 was yes, please summarize the projected schedule for the installation of additional state-owned CB radios in your agency's patrol cars.

____

____

____

47. If your answer to Question 45 was no, please explain.______________

____

____

____

48. If all your agency's patrol cars are not currently equipped with state-owned CB radios, does your agency allow its officers to install their own CB radios in the patrol cars they drive?

_____Yes _____No

49. If your answer to Question 48 is yes, please indicate approximately how many patrol cars are equipped with <u>officer-owned</u> CB radios.

_____Number of patrol cars equipped with officer-owned CB radios

50. Do you operate (or plan to operate) any special purpose vehicles (e.g. mobile command posts, four-wheel drives, snowmobiles, boats, aircraft, etc.)?

_____Yes _____No

51. If yes, what types of special purpose vehicles and how many of each type do you operate (or plan to operate)?

____

____

52. If you operate (or plan to operate) special purpose vehicles, approximately how many of each type are (or will be) equipped with CB radios?

____

____

53. Do you maintain any CB base stations (including remotely controlled base stations)?

_____Yes _____No

54. If yes, how many?

_____Base Stations

55. Where are these base stations located?________________________________

____

____

56. Are all your base stations located in your agency's facilities?

_____Yes _____No

57. If no, in what other facilities are they located? ____________________

____

Please supply a map or listing showing the general location of all CB base stations you use (including those not in your agency's facilities).

58. If your agency owns CB mobile or base station transceivers, have you measured equipment reliability?

____Yes ____No

59. If yes, please summarize your findings.______________________________

____

____

If you have prepared any reports on CB equipment reliability, please send us copies. Indicate which of them, if any, you want returned.

60. Are you planning any significant changes in your CB equipment in the future?

____Yes ____No

61. If yes, please describe your planned changes. ________________________

____

____

____

____

NONGOVERNMENT CB GROUPS

62. Does your agency have working arrangements to receive support from non-government CB groups such as REACT and ALERT?

____Yes ____No

63. If yes, please complete the table on page 14.

CB USE BY OTHER AGENCIES IN YOUR STATE

64. Is any other state agency in your state (e.g., State Highway Department, State Fish and Game Department, etc.) using (or planning to use) CB?

____Yes ____No

QUESTION 63. NONGOVERNMENT CB GROUPS

NAME OF CB GROUP AND NAME OF CONTACT	MAILING ADDRESS OF CONTACT	FUNCTION TO BE PERFORMED	FORMAL OR INFORMAL AGREEMENT*	AMOUNT OF SUPPORT**

* Indicate whether you have a formal (written) working agreement or an informal (oral) one. *If you have a formal agreement, please send us a copy of it.*

** Enter 1 if active support; 2, if limited support; 3, if planning to be active.

65. If yes, please identify the agency or agencies and the purposes for which each agency is using CB.

- State Agency ______________________________

  Purposes for Using CB ______________________________

  ____

  ____

  ____

  ____

- State Agency ______________________________

  Purposes for Using CB ______________________________

  ____

  ____

  ____

  ____

- State Agency ______________________________

  Purposes for Using CB ______________________________

  ____

  ____

  ____

  ____

(If more than three other state agencies are using or planning to use CB, please use the back of the page to record the information we are requesting.)

FEDERAL ROLE IN CB

66. In your judgment, are additional CB channels in Class D required?

_____ Yes _____ No

67. Please explain your answer.____

____

68. In your opinion, is additional CB service needed (e.g., 220 MHz FM)?

____Yes ____No

69. Please explain your answer.____

____

70. In your judgment, should tighter control be exercised over the use of CB channels, especially in emergencies?

____Yes ____No

71. Please explain your answer.____

____

72. If your answer to Question 70 was yes, how should that control be effected?

____

____

____

____

73. Should a special emergency service be created within the Citizens Radio Service (similar to RACES within the Amateur Radio Service)?

____Yes ____No

74. If yes, what general types of regulations should govern this special emergency service?

____

____

____

75. If your answer to Question 73 was no, why not?________________________

____

____

76. Should state, regional, or national organizations be developed to further the use of CB during emergencies?

_____Yes _____No

77. If yes, what type of functions should such organizations perform, and how should they be structured?

____

____

____

78. If no, why?____

____

____

CB BENEFITS AND DISADVANTAGES

79. In your opinion, what are the major benefits and disadvantages of CB in state public safety operations?

____

____

____

____

80. How could these benefits be expanded and the disadvantages be minimized?

____

____

____

____

81. Please provide any additional information on CB applications to public safety operations you feel appropriate.

LOCAL JURISDICTIONS

82. Please supply us with the identities of public safety agencies in four cities and counties in your state which have effective CB programs and to which we can send questionnaires on CB. In general, the four jurisdictions should be as follows: (If the jurisdictions with effective CB programs in your state do not correspond to our four population size categories, please send us information on the four jurisdictions in your state best illustrating effective use of CB in public safety operations.)

- Most populous jurisdiction in your state having an effective capability to use CB in public safety operations. (If the largest jurisdiction is likely to be uncooperative, please supply us with the name of another large jurisdiction with an effective CB capability.)

  Name of Jurisdiction ______________________________

  Name of Person to Contact ______________________________

  Address ______________________________

  ______________________________ Zip ____________

  Telephone No. (   ) ______________________________

- City or county containing the state capitol. (If this jurisdiction does not have an effective capability to use CB in public safety operations, please substitute another jurisdiction with a medium-sized population.)

  Name of Jurisdiction ______________________________

  Name of Person to Contact ______________________________

  Address ______________________________

  ______________________________ Zip ____________

  Telephone No. (   ) ______________________________

- Another representative jurisdictions in your state with a medium-sized population other than the jurisdiction containing the state capitol.

  Name of Jurisdiction____

  Name of Person to Contact____

  Address____

  ____Zip______________

  Telephone No. (   ) ____

- Representative jurisdiction in your state with a small-sized population.

  Name of Jurisdiction____

  Name of Person to Contact____

  Address____

  ____Zip______________

  Telephone No. (   ) ____

83. May we indicate that your agency suggested that we contact the jurisdictions you have indicated?

_____Yes   _____No

PLEASE DON'T FORGET COPIES OF CB PLANS AND OTHER MATERIALS REQUESTED IN QUESTIONS 7, 9-12, 53-57, 58-59, 60-61, AND 62-63.

THANK YOU FOR YOUR ASSISTANCE.

OMB NO. 120-S77001
Approval Expires April, 1977

CITIZENS BAND STUDY

CB ORGANIZATIONS QUESTIONNAIRE

CB ORGANIZATION ______________________________

Person Filling Out Questionnaire

Name ______________________________

Title ______________________________

Address ______________________________

City, State ______________________________ Zip __________

Telephone No. (   ) ______________________________

INSTRUCTIONS

The following questions are designed to obtain information from you on Citizen Band (CB). The information you supply will be used in a study of CB being performed by System Development Corporation for the Defense Civil Preparedness Agency (DCPA).

This questionnaire is authorized by law (50 U.S.C. App. 2253 and 2281; E.O. 10952). While your response is voluntary, your cooperation is needed to complete this survey. Please be candid in expressing your opinions, since good answers to this questionnaire are critically important to the adequacy of our recommendations to DCPA.

We anticipate that it will take you about 30 minutes to complete this questionnaire. If any of your answers exceed the space allowed, please use the back of the page. In order for us to complete the processing of this questionnaire, please return it in the enclosed self-addressed, stamped envelope by ______________________.

Completed questionnaires should be mailed to:

Murray Rosenthal
System Development Corporation
2500 Colorado Avenue
Santa Monica, California 90406

1. What geographic area does your CB organization serve?

2. What actual and anticipated functions does your organization perform? (Please check all applicable boxes.)

Functions	Have Actually Performed	Are Prepared to Perform
Receive and Relay Request for Assistance from Motorists		
Provide Information to Motorists		
Provide Physical Assistance to Motorists		
Report Crimes, Accidents, Etc., without Organized Patrols		
Conduct Organized Patrols to Report Crimes, Accidents, Etc.		
Conduct Search and Rescue Operations		
Support Emergency Operations in Disasters		
Assist in Public Functions, Parades, Fairs, etc.		
Other		

3. If other, please explain.

4. If your organization has used CB in any large-scale emergencies, please give an example of a recent use. Please give a brief description of the emergency, including date and location; describe the functions your organization performed; identify any other CB organizations that participated; and give the approximate number of base stations and mobile units from each. If you want to describe additional emergencies with which your organization assisted, please do so. If you need additional space, please use the back of this page or additional pages as necessary.)

____

____

____

____

____

____

____

____

5. How many members does your CB organization have?

______Members in Your Organization

6. How many CB radios are available to your organization?

______Base Stations

______Mobile Units

______Handheld Units

7. Do your members have any special vehicles (e.g., 4-wheel drives, snowmobiles, etc.) equipped with CB?

______ Yes ______ No

8. If yes, what types and how many of each? ______________________________

____

____

____

9. What other types of emergency equipment does your CB organization have (e.g., generators, resuscitators, etc.)?

____

____

____

10. Are all base stations located in individual members' homes and businesses, or are some base stations located in special monitoring locations? (Please check the applicable statement.)

_____ All in homes and businesses

_____ Some in special monitoring locations

11. If you maintain special monitoring locations, how many do you operate and where are they located?

____

____

____

12. What channels do you routinely monitor, and what is your monitoring schedule?

____

____

13. Does your organization use Class D-SSB or Class A equipment? (Please check all that apply.)

_____ Use Class D-SSB

_____ Use Class A

_____ Use Neither Class D-SSB
Nor Class A

14. If you use either Class D-SSB or Class A equipment, what applications do you make of it?

____

____

____

15. How is your organization structured? ______________________________

____

____

____

Please include an organization chart, or table of organization, if you have one; if you do not, you can sketch one on the back of this page.

16. Have you developed an emergency plan, standing operating procedures, or similar guidance material for use by your members?

_____ Yes _____ No

If you have such material, please send us copies. If you so indicate, we will send back any material you want returned.

17. How do you publicize your capabilities and services to the public? ________

____

____

____

18. How do you recruit new members for your organization?

____

____

____

19. How do you train members of your organization?______________________________

____

____

____

20. How do you maintain operational and communications discipline among your members?

____

____

____

____

21. Is your organization officially recognized by any local civil defense, police, fire, or emergency medical organizations?

______ Yes ______ No.

22. If yes, please identify them.____

____

____

____

23. Do you have written working agreements with any of these organizations?

______ Yes ______ No

If you have such written agreements, please send us a copy of each. Please indicate which, if any, you want returned.

24. Is your organization affiliated with any local, regional, state, or national CB organizations?

______ Yes ______ No

25. If yes, please identify the organizations with which your organization is affiliated.

____

____

26. In your judgment, are additional CB channels needed in the present Class D service?

_____ Yes _____ No

27. Please explain your answer. ______________________________

____

____

28. In your judgment, is additional CB service needed (e.g., 220MHz FM).

_____ Yes _____ No

29. Please explain your answer. ______________________________

____

____

____

30. In your judgment, should tighter control be exercised over the use of CB channels, especially in emergencies?

_____ Yes _____ No

31. Please explain your answer. ______________________________

____

____

32. If your answer to Question 30 was yes, how should that control be effected?

____

____

____

____

33. Should a special emergency service be created within the Citizens Radio Service (similar to RACES within the Amateur Radio Service)?

_____ Yes _____ No

34. If yes, what general types of regulations should govern this special emergency service?

35. If your answer to Question 33 was no, why not?

36. Please provide any additional comments on CB you may feel appropriate.

PLEASE DON'T FORGET THE MATERIALS REQUESTED IN QUESTIONS 15, 16, AND 23.

Thank you for your assistance.

APPENDIX H

BIBLIOGRAPHY

In addition to the works included in the following bibliography a number of periodicals were monitored consistently for information on CB. These include:

ALERT 44

American Monitor Magazine

CB Magazine

CB Radio/S9

Electronics

Electronics News

Los Angeles Times

National REACTer

New York Times

Overdrive

While many articles from these periodicals contributed to the overall understanding of the Personal Radio Services, only those specifically cited in the report are included in the bibliography.

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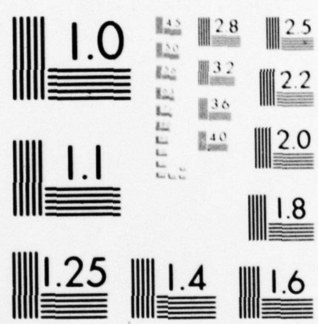

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System Development Corporation, Santa Monica, California; THE ROLE OF THE CITIZENS BAND RADIO SERVICE AND TRAVELERS INFORMATION STATIONS IN CIVIL PREPAREDNESS EMERGENCIES, by Murray Rosenthal. Defense Civil Preparedness Agency, Washington, D.C., Contract No. DCPA01-76-C-0330, Work Unit 2214D, TM-5752/002/01, 386 pages. May 15, 1978. Unclassified.

Final report on a project to assess the capabilities of the Citizens Band (CB) Radio Service (and other services in the Personal Radio Services) and of Travelers Information Stations (TIS) to provide emergency communications for civil preparedness operations. The project determined the range of uses currently made of CB and TIS. The project identified formal and informal CB organizations and evaluated their utility in emergency operations. The project evaluated the role of DCPA in providing guidance and direction in the use of CB and TIS in emergency situations.

The project also evaluated miscellaneous aspects of CB such as: (1) uses made of CB by truckstops, (2) applications of CB by the National Weather Service SKYWARN program, (3) impact of National Highway Traffic Safety Administration National Emergency Action Radio (NEAR) program on emergency operations, and (4) appropriate functional relationships between CB and amateur radio (including the Radio Amateur Civil Emergency Service, RACES) in emergency operations. The project concluded that, despite technical and operational limitations, CB operators and their equipment are valuable resources in emergency operations and that DCPA should undertake a program to increase their effectiveness. The project also determined that TIS systems are useful in emergency operations. The report recommended specific CB and TIS programs for DCPA adoption.

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